THE UNIVERSITY
of EDINBURGH

RHYTHMS THAT MATTER

THE KINETIC MELODIES AND MATTERINGS OF AUTISM AND EQUINE THERAPY PRACTICES IN THE UK AND USA

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PhD Social Anthropology
The University of Edinburgh
2019

Declaration

I declare that, except where otherwise indicated, this thesis is entirely my own work, and that no part of it has been submitted for any other degree or professional qualification.

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April 2019

ABSTRACT

This thesis is an ethnography of practices of equine therapy used as interventions for autistic people in the UK and USA. It answers the overarching research question: How is autism enacted by models used to understand the efficacy of equine therapy practices? Analysing data from 16 months of fieldwork I show that autism was perceived as a primarily sensorially-mediated condition produced by the person's embodied inhabitation in the environment. Endocrinological and neuroscientific theories, and personal experiences were incorporated to explain how the therapy worked and relatedly, to understand the condition of autism. I show that vital forces of "energy" and "intent" were believed to score through environmental, sensorial, endocrinological and neurological scales and to transmit sympathetically, and therapeutically, across horse, client and practitioner. These multispecies transmissions were understood to resonate via a property of "flightiness" shared by autistic clients and horses perceived to be the result of sensory sensitivities and an overactive "fight or flight" response.

I argue that material metaphors of bodily "integration" and disintegration, "pressure" and its release, and being in and out of "balance" in particular were central to how therapeutic efficacy was perceived to be achieved. These were indeterminate simultaneities of forms of movement and stillness used by my interlocutors to frame equine therapy as a way of calibrating the highly inconstant, dynamic bodily systems perceived to be involved in the autism-equine therapy nexus. I argue that therapeutic efficacy was understood to be orchestrated by bringing various parts and wholes of the lively bodies of clients, horses and practitioners into proportion and harmony, and in coproducing a kinetic melody. Practitioners of the therapy aimed to bring clients into synchrony with the rhythmic movements of the horse, and more broadly, with the rhythms of social time. I propose three therapeutic rhythms to comprehend these models of efficacy, their perceived material effects and the interplays of movement and stillness bound up therein: 1) the calming rhythm of horseback movement, 2) the anchoring rhythm of weekly sessions, and 3) a rhythm produced by the expectation of achieving therapeutic goals in the future. In both senses of the word, these were rhythms that mattered.

I argue that AM practices and the biofeedback loops evoked therein acted as lively sites in the morphing of autism; whereby the condition became framed and experienced in new ways. The epistemological uncertainty surrounding the condition, its enduring heterogeneity and kaleidoscopic character allow the condition to act as a mirror on society. The thesis argues that firstly, promoting autism as a sensorially-mediated condition produced in engagements with sensory and social worlds reflects broader societal preoccupations with the interface of mind-

body dualism and holism. Secondly, it argues that the perceived amelioration of autistic symptoms by AM practices reflects popular, scientific and scholarly concerns about what it is, exactly, that differentiates human animals from nonhuman animals. Each section of the thesis details a niche coproduced by humans and horses that I argue was required for this sensorially-mediated kind of autism to emerge as a way to be a person. This thesis contributes to the scholarship of human-animal studies, the anthropology of the body and autism studies.
Keywords: *autism, efficacy, equine therapy, kinetic melody, relationality, symbolic matterings, therapeutic rhythms*

LAY SUMMARY

This thesis is an anthropological study of the interactions of horses and humans on and off the autism spectrum in the context of equine therapy in the UK. It answers the overarching research question: How is autism understood through the practices of equine therapy and associated notions of therapeutic efficacy? Analysing data from 16 months of fieldwork I show that autism was seen in these contexts as a sensorially-mediated condition produced in continual biofeedback loops of the body-self-world. The thesis shows the role of equine therapy in producing this perception. A range of neuroscientific, immunological and endocrinological knowledges regarding bodily processes and lived experiences were entwined into an overarching model of autism and relatedly therapeutic efficacy. Forces of "energy" and "intent" were perceived to score through these systems of the body and to be able to transmit between bodies, and therapeutically, between horse, client and practitioner. Notions of bodily "integration", "pressure" and "balance" in particular were used to understand how the therapy facilitated better "social functioning" by my interlocutors.

Efficacy was believed to be produced in orchestrating therapy sessions that could synchronise clients with rhythmic horseback movement, the communications of the practitioner and more broadly, with the rhythms of social time. Three therapeutic rhythms held together the models promoted by the people I got to know: 1) the calming rhythm of horseback movement, 2) the anchoring rhythm of weekly sessions, and 3) a rhythm produced by the expectation of achieving therapeutic goals in the future. The uncertainty surrounding autism due to its changing character and the lack of a conclusive biomedical model of the condition, its causes, or potential cures allow the condition to act as a mirror on society. The view that autism was a primarily sensory condition and the perceived assistance offered to autistic people by AM practices reflect broader societal preoccupations with 1) the interface of mind-body dualism and holism and 2) what it is, exactly, that differentiates human animals from nonhuman animals. The thesis details environmental,

behavioural and physiological aspects that had to be in place for this particular kind of sensorially-mediated autism to emerge as a way to be a person.

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ACKNOWLEDGEMENTS

Firstly, I extend my sincerest thanks to the Economic and Social Research Council who funded this project [grant number: ES/J500136/1] and without whom it would not have been possible. My appreciation also goes to the Social Anthropology staff. It has been a privilege to study within such a rich, inspiring and welcoming department. My sincerest gratitude goes to my supervisors Stefan Ecks and Martyn Pickersgill for their intellectual and personal generosity and encouragement and for setting such a good example of work/life balance. Stefan, for the email you sent in the lull between Masters and PhD telling me that it was "time to get back in the saddle", I will always be truly grateful. For the invaluable insights given during Friday morning Writing Up sessions thanks go to Francesca Bray, Ian Harper and Sandy Robertson. Thanks also to Ian Harper and others for developing the Edinburgh Centre for Medical Anthropology (EdCMA) and fostering a supportive environment within which to study. Lucy Lowe, thank you for always having an encouraging, "you'll smash it" to offer. I am grateful to the Students of Medical Anthropology (SoMA) for coproducing a collegial atmosphere for students within EdCMA. BB, Bex, Lilian, you are all stars. Thanks go to my cohort for their part in this project and especially to Alysa, Bridget, and Elliott for offering so many kinds of support throughout.

Huge thanks go to my interlocutors who showed me so much. There are too many to mention, so I will thank you all for your patience in teaching me about your worlds, and for your generosity in sharing your lives with me for this time. In particular I must thank Thomas for teaching me how to be autism friendly – and how to stop mixing my metaphors. My gratitude goes to the staff at Epona, Pegasus and Atalanta for your openness and willingness to take part in the project. Lottie, Chrissie, and Verity you have my sincerest appreciation. You took me in and showed me the world of equine therapy. Louis, Amy, Freya, and Paul, thank you for your insights and time. To Jayden and Oake; Andrew, Henry, Lou and Carole; Frankie, Bilal and Leena' Angharad and Vicky, thank you for sharing this part of your lives with me. To Janey and Ally, thank you for giving me somewhere safe to call home for my field work.

For the endless encouragement over the years my thanks go to Heather and Giannos and to Kev and Kristina. You showed me how to make things happen. To Silas and Michelle, and Ben and Lauren for your reminders that there was more to life than the PhD and to Marianne and Jules

who took me in for weeks on end when I needed it. My deep gratitude goes to my parents, Ian and Phyllis Malcolm for filling the house with books, always encouraging us to be fascinated by the world and to follow our interests, and for your unconditional support throughout this process.

Phyllis, your endless generosity and kindness in caring for my little M while I wrote has been remarkable. I could not have written this thesis without you.

Mike, it has been quite a journey we have been on together. Thank you for making it such a joyful one (and for encouraging me to use full stops).

Madeleine, I dedicate this thesis to you.

PROLOGUE

Rhythms that Matter

It was a cold wet day in November and I was tramping through thick grass alongside a small child on the back of a black and white pony named Sylvan. Andrew was a slight five-year-old boy with jet black hair and a diagnosis of autism spectrum disorder (ASD). We walked along as Chrissie, the petite, brunette equine therapy (ET) practitioner leading the session asked us to stop under a low-lying branch of a tree. Taking the branch in her hand she gently encouraged Andrew to look up at the leaves. She shook it, releasing the water which fell in droplets onto his hands and face. He giggled and smiled before we continued walking along the path that took us between the horses' fields and the woodland trail specifically designed for these sessions. Sylvan stopped suddenly, planting his feet firmly, and refusing to move.

I pulled his headcollar in an attempt to get him to move forwards. Chrissie pointed out a fallen tree 50 yards ahead, indicating her perception that this was Sylvan's motivation for stopping. "I could tell something was up before I saw the tree. Sylvan must have already seen it" she told us. "He's like that when something changes in his environment". Chrissie addressed Andrew's teacher, "Do you remember when the tractor was in the field a few weeks ago?". "Yeah, I do!" she responded, "Sylvan and Andrew are two peas in a pod then. He doesn't like it when things change either". Chrissie explained this resonance, "I think that's what it is about horses and autistic kids that makes them the same. They both share that they have an overactive hypothalamus, the part of the brain that controls the fight, flight, freeze mechanism".

This merging of the "overactive fight, flight, freeze mechanism" with the sensory environment through which one moved, and shared by Andrew and Sylvan, gives an entry into the complexity of autism's enactment by the practices of equine therapy. It also indicates the multispecies resonances bound up in my interlocutors' perceptions of the therapeutic efficacy of ET. The models of therapeutic efficacy perceived by the people I got to know were crafted around an understanding of autism as a deeply embodied condition, and one enacted through the inhabited environment. For the people I got to know both on and off the spectrum, autism involved multiple interrelated processes of the mind, body and brain. Louis, was the founder of the Atalanta Method (AM) practiced by Chrissie. As he described it:

> You've got someone with a brain nervous system issue… you have to understand the cell

> danger response, the amygdala, cortisol, how that works. And why that is so acute with people with neuropsychiatric issues. And then the first thing you have to do is calm that down and keep that calm… Once you've got the brain in the oxytocin phase, and you are doing certain kinds of movement that are opening up the learning centres of the brain, you have to ask, so what's going on with the cerebellum? What's going on with the vestibular system? How do you open up the pre-frontal cortex? What's BDNF - the brain drive neurotrophic factor?... If you activate the psoas muscle, you activate the amygdala. If you don't understand that, you shouldn't really be messing with kids with autism. They are too fragile.

As I will go on to argue, for practitioners in addition to the careful balancing of this vast array of bodily systems managing successful therapy sessions also lay in stepping into and out of multiple affective and relational multispecies attunements. As Chrissie put it:

> You need to be aware of exactly what's going on. Monitoring the horses' reactions. Managing mum/teacher/carer. Trying to make sure the child is pushed a little bit, but not stressed… It's like the old-fashioned weighing scales with the little tiny weights, you know the ones? Except instead of two trays, you've got at least three, probably more like four or five. And all the time you're moving tiny weights off of one to another one, and just trying to keep it all level and all balanced… There's no constant.

Here Chrissie refers to finding a balance in a context of flux and inconstancy. This excerpt reflects one of many ambiguous interplays discussed by my interlocutors and detailed throughout this thesis. These ambiguities of stability and change intimated by Chrissie and Louis in the above vignettes offer an opening into the means used by my interlocutors to deal with the uncertain worlds of autism and equine therapy this thesis explores.

Autism is defined as a neurodevelopmental disorder of social interaction, communication and intersubjectivity. Nonhuman animals and in focus here horses have however, been reported to facilitate enhanced communicative behaviours in children and adults with autism. During the pilot study for this doctoral project at an equine therapy centre in Scotland I explored reports from parents who told me their child had started talking for the first time after taking part. I was told, "he said 'I love you' for the first time". These reports have increasingly emerged from a range of sources in the UK and USA and necessitated the question: how could a horse make an autistic child talk? In order to explore this phenomenon, I followed the practice of the 'Atalanta Method' (AM) - an autism-specific method of equine therapy - from two sites in the UK back to its origins at a ranch in the USA over a period of 16 months of ethnographic fieldwork.

Taking relations as the smallest units of social life (Strathern 1991) and with a related focus on detailing phenomena empirically as they are enacted through practices (Mol 2002), the thesis takes the relational practices of equine therapy used as interventions for autism as its starting point. The requirement for a focus on practice will be detailed in more depth in the Introduction. For the moment I will note that in the context of a highly heterogenous, kaleidoscopic condition that is,

1) defined by issues with social interaction and communication and 2) that to date has no conclusive biomarkers, it is useful to explore autism as a condition enacted in the practice of social relations between beings.

Whilst focusing mostly on AM, this thesis explores two certified equine therapy methods used as interventions for children and adults with autism in the UK, 'TRAD' and 'Atalanta Method' (AM). TRAD is a large UK-wide organisation established in the 1960s that regulates smaller organisations offering equine therapy for people with all forms of disability. Sessions are focused on and devised around providing physiotherapeutic benefits, and the formal teaching of people how to control a horse effectively, how to listen and respond to instructions, and how to interact with peers. As such, whilst they are offered widely across the UK for autistic people, these sessions were not specifically designed as a treatment for autism.

Based on traditional Anglo-Irish horsemanship methods, and using traditional leather saddles and bridles, the TRAD practitioner utilises a range of pre-set tasks for riders. For example, lifting and carrying hoops or toys from one side of the arena to the other and placing them in buckets at the end, racing in walk and trot, or weaving in and out of lines of poles. These activities are largely unchanged since being designed by a team of equestrians and physiotherapists in the 1960s. TRAD sessions - if organisational resources permit - tend to occur within indoor "riding arenas": rectangular, fenced, sand arenas with breeze block foundations and corrugated sheet metal walls and roofs. These spaces are usually lit by strip lighting and designed with limited if any windows to the outside. This is done to limit opportunity for the horses to become 'spooked' and relatedly behaving in an unpredictable, 'flighty' manner – by goings on outside the arena.

AM is an autism-specific equine therapy intervention established in the USA in the mid 2000s. It travelled to the UK in 2010. It is a six-stage process consisting firstly of providing "the right environment", "movement" and addressing "sensory issues". Once the above were considered to be in place, "perspective – taking", "academics" and "self-advocacy" were understood to be able to be taught. This method was devised specifically for autistic people, and particularly around the perceived centrality of sensory idiosyncrasies to the condition. AM was devised within 'Western horsemanship' and to use related equipment of large saddle with pommel and Western bridle.

The method founders suggested three reasons for why riding, and specifically AM's signature feature of double back-riding – where the child rides in the saddle in front of the practitioner - was more beneficial than non-horse-based interventions and the TRAD method. 1) There is no expectation of eye contact due to the forward-facing position of both client and practitioner. 2) "Deep pressure", considered to be beneficial, could be provided both from contact with the horse and the person back-riding with them. 3) The aforementioned alongside the hip-rocking motion

of being in the saddle, were believed to modulate particular bodily processes. To briefly condense, these properties were understood to actively soothe "sensory issues", engage and mobilise the production of oxytocin and inhibit the release of "cortisol", encourage the "release of brain derived neurotrophic factor" (BDNF) and in so doing facilitate neuroplasticity and behavioural change.

These effects were perceived to be enacted through particular practices and environments. The AM method taught practitioners to "follow the child" when and wherever practicable and provide "the right environment" in which "following" could be maximised. Atalanta Method sessions were to be held outside wherever possible. Being outside in 'nature' with access to expansive movement through 'natural' features of the environment such as sunlight and water was perceived as key to helping autistic people find calm 'internal' spaces, and thus central to therapeutic efficacy. As will be explored, each of my three field sites - Epona and Pegasus in the UK and the Atalanta Ranch in the USA - had designed and implemented a range of 'natural features' for engagement during sessions, including a woodland trail where the vast majority of sessions occurred.

Whilst practitioners of TRAD were conscious of the needs of each person in relation to their condition, these sessions were designed around perceived physiotherapeutic needs of military ex-servicemen, and people with physical disabilities such as cerebral palsy in the 1960s, and not autistic people. This is differentiated from AM which was designed very specifically around perceived neurobiological and sensory profiles and relatedly practitioners' perceptions of the therapeutic needs of autistic people, and notably children. I have here introduced the idea that TRAD and AM therefore aimed to inculcate radically different dispositions.[1] I now detail my research questions, and the overall argument of the thesis.

This doctoral thesis answers the overarching research question: How is autism enacted by models used to understand the efficacy of equine therapy practices? Within this are situated the following sub-questions: 1) How are sensory idiosyncrasies perceived to be involved in this enactment? 2) How are these mapped onto other processes by parents, practitioners, and autistic people? 3) Where are autistic bodies and selves perceived to begin and end? 4) What is the role of the horse in these processes and enactments? 4) What is the significance of spatiotemporality and materiality in my interlocutors' enactments detailed above? 5) What do equine therapy practices do to how we understand autism?

This thesis argues that collectively AM practitioners, some parents and adults with autism that I got to know experienced and conceptualised autism as a sensorially-mediated condition produced in continual biofeedback loops of the body-self-world. My practitioner (and some parent)

[1] This will be explored in more detail in a later section.

interlocutors did so by melding a proliferation of at times contested knowledges garnered from a range of scientific and lay sources and through their own experiences with clients and/or their own children with autism. Neuroscientific and endocrinological models of bodily systems, and personal experiences were entwined in local enactments of autism. I structure the thesis through following these models as they scaled 'down' from the environment 'in' to the body and decreasing to the minutia of hormonal flows in the blood of the body. Each chapter explores one of said models of efficacy as my interlocutors described it and offers an exploration of the metaphors used to try to apprehend the simultaneities, paradoxes and uncertainties enacted therein. These included: "the right environment"; "the senses"; the "fight or flight response" and "limbic resonance"; and the role of flows of oxytocin and "cortisol" in the blood in facilitating "neuroplasticity".

Whilst detailed in relation to what is traditionally defined as the 'inside' of the body, the bodily systems detailed were always considered as enacted by and through one's situation within "physical" and "human" environments. I show that vital forces of "energy" and "intent" were understood to score through these environmental, sensorial, endocrinological and neurological scales of therapeutic efficacy. These forces were believed to transmit sympathetically, and therapeutically, across horse, client and practitioner. These multispecies transmissions were understood to resonate via the property of "flightiness" shared by autistic clients and horses and the result of sensory sensitivities and an overactive "fight or flight" response.

As will be shown throughout these situated notions of therapeutic efficacy were crafted through a proliferation of at times conflicting and contested knowledges and expressed by a range of simultaneous interplays of movement and stillness. These included: freedom and constraint, naturalness and domestication, horseback motion and sensorial stillness, "sensory overload" and flux, and "integration"; bodily and behavioural "pressure" and release; "balanced" and imbalanced homeostatic and interpersonal systems of the body; sequential and parallel perceptual processing; energy blockages and flows; hormonal, endocrinological and behavioural balance and stability and neurological and communicative mutability.

These interplays were intrinsic to the making of therapeutic efficacy, particularly for their indeterminacy and failure to settle into easily bifurcated distinctions. These interplays were directly related to perceptions of the processes, material boundaries and permeabilities of the autistic (and more broadly living) body. This proliferation of invoked bodily systems was produced in a context of deep uncertainty regarding the kaleidoscopic condition of autism and related therapeutic effects of equine interventions that one set of biomedical knowledges could not provide a conclusive explanation for.

I will show that in particular the notions of "integration" and disintegration, "pressure" and its release and being in and out of "balance" emerged as significant corporeal frames used to understand how AM worked. These material metaphors were used to comprehend equine therapy as a way of calibrating the highly inconstant, dynamic environments, and sensory, endocrinological and neurological systems of the body invoked in the autism-equine therapy nexus. I argue that these notions were scaled 'up' by my interlocutors to understand how AM could facilitate better "social functioning" in clients. "Sensory integration" led to social integration. "Deep pressure" and "finding the right pressure" acted as means to pressure clients towards this broader goal of social integration. Bodily "balances" were understood to lead to harmonious "balancing" of persons in relations of sociality.

I argue that my interlocutors' views reflect an understanding that via holding various proportions in harmony through finding various scales of bodily "balances", harmonies of selves in shared temporal and social synchronies could be coproduced by humans and horses and enact states of sociality and relatedness. 'Kinetic melody' is a term used to refer to chains of movements united by the meaning of the task (Luria 1973). It is used to explore the musicality of language and here I apply it to the melodies of non-verbal communications bound up in the orchestrations of AM. I argue that in therapy sessions practitioners attempted to enact a coproduced 'kinetic melody' by bringing autistic people into rhythmic synchrony with the movements of the horse. I extend this framing to suggest that this was perceived to result more broadly in bringing clients into synchrony with social time. For any kind of overall 'kinetic melody' to emerge through encouraging clients to synchronise with the meaning of social time, and thus enact relatedness, these various parts had to be held in balanced proportion with one another and the whole orchestration of each session.

I suggest that simultaneous interplays of movement and stillness encapsulate the dynamic systems detailed by my interlocutors in their descriptions of therapeutic efficacy. I argue that the models used by my interlocutors to make sense of deep uncertainty around conceptualisations of autism and therapeutic efficacy in the context of equine therapy are best comprehended through transspecies resonances and synchronies between lively bodies-in-time. Here I refer to rhythm, understood to be a category of lived experience rather than a set punctuation of time as a mode of comprehending my interlocutors' multifarious models of efficacy. I detail three interrelated and temporally expanding therapeutic rhythms to comprehend these models of efficacy, their perceived material effects and the interplays of movement and stillness bound up therein. These are: 1) the calming rhythm of horseback movement, 2) the anchoring rhythm of weekly sessions, and 3) a rhythm produced by the expectation of achieving therapeutic goals in the future. In both senses of the word, these were rhythms that mattered.

I show that the proposed altering of the mind through the body via AM practices was understood by my interlocutors to occur through the modulation of three biomedically framed corporealities: "limbic resonance", "oxytocin", and "neuroplasticity". I have referred to these as 'symbolic matterings' to encapsulate 1) the symbolic power held by these biomedical notions of the matter of the body 2) how the perceptions around these notions altered the ways that practitioners interacted with clients, and 3) the significant material effects these interactions produced. I argue that the three material metaphors introduced above: "balance", "integration", and "pressure", were used by my interlocutors to explain how "limbic resonance" facilitated the therapeutic transmission of affect, how oxytocin flows were enhanced, and how "neuroplasticity" was enabled.

In sum, I will show that through the translation of AM practices into the UK equine therapy context autism was enacted as a sensorially-mediated condition of the body-self-world. As such, I argue that AM and its practices act as a site of contemporary looping processes as autism becomes conceived of in deeply sensorial ways. I will detail three niches - particular conditions coproduced by horses and humans - required for this particular enactment of autism to occur: environmental, behavioural and physiological. The thesis is divided into three sections in keeping with this analytical frame. More broadly I suggest that due to its enduring heterogeneity and kaleidoscopic character autism remains as a mirror on society. I argue that current looping processes enacting a sensorially-mediated kind of autism produced in continual biofeedback loops of the body-self-world reflect broader societal engagement with tensions between mind-body dualism and holism.

Relatedly, I will argue that 1) the transspecies resonances bound up in each layer of therapeutic efficacy and 2) each niche required to enact efficacy and bound up in these looping processes, constitute an animalising of humans, and a humanising of horses. This reflects broader scientific, intellectual and popular concerns with human exceptionalism and what it is, exactly, that differentiates human animals from nonhuman animals. The thesis speaks to three main literatures; autism studies, human-animal studies, and the anthropology of embodiment, all of which engage with the methodological and theoretical approaches of material-semiotics. These literatures will be explored as I detail the history of: the condition of autism, the methods of equine therapy in use as interventions for autistic people in the UK, and the organisations that formed my field sites.

INTRODUCTION

Therapeutic Ecologies: Autism and Equine Therapy

Autism has been called a puzzle, an enigma[2] and is a condition now defined by its heterogeneity (Hollin 2017). With prevalence rates soaring in the last few decades from five in 10,000 in the 1980s to 1 in 59 in in a recent estimate from the *Centers for Disease Control* (CDC) (Baio et al. 2018) it has been referred to as an epidemic. A so-called 'invisible' condition, its ever expanding "spectrum"[3] has to date engaged with dominant constellations of meaning in societies of the Global North over the past two decades; the Internet, information processing models of the brain, older concerns with reformation (Foucault 1975 cf Gutting 2011) and capitalistic self-absorption, the shifting sands of the normal and the pathological (Canguilhem 1966) and the biologisation of ill health, to growing concerns around causation such as vaccine injury and the increasing toxicity of the environment.

In the process of redefining Emil Kraepelin's term dementia praecox into schizophrenia, Eugen Bleuler created the word 'autism' (Bleuler & White 1912 cf Kuhn 2004). Bleuler noted an "[a]utistic withdrawal of the patient to his fantasies, against which any influence from outside becomes an intolerable disturbance. This seems to be the most important factor" (ibid, 363). It was not until Leo Kanner and Hans Asperger simultaneously defined autism as a disorder in the 1940s that being autistic became a way to be, a new 'kind' of person (Hacking, 2007). Since Kanner, autism has been continually redefined. In 1970 the *Journal of Autism and Childhood Schizophrenia* was established by Kanner with the UK's first paediatric psychiatrist, Michael Rutter. This was renamed the *Journal of Autism and Developmental Disorders* in 1979 (Evans 2013) indicating the birth of a newly discrete psychiatric category. Emerging as a symptom of dementia praecox and later defined as a discrete psychiatric condition, autism has slowly been re-categorised as a 'developmental', and latterly 'neurodevelopmental' condition.

[2] Much to the discontent of vocal autistic advocates.

[3] There has been recent pushback from autistic advocates regarding the use of the term "spectrum" for its action of collapsing the complexity of autistic profiles into a linear framing. The terms "spikey profile" and "constellation" are becoming used as ways of accounting for the dynamism of abilities and difficulties experienced by autistic people.

Autism was characterised in the DSM-IV (APA 1994) by a 'triad of impairment': social interaction, communication and repetitive behaviours, known as stereotypy (Newschaffer et al. 2007). It was named Autistic Disorder (AD) in 1994 with the inclusion of associated category, Asperger's Disorder, including for the first time autistic people with extensive language skills (APA 1994). Whilst the DSM-5 definition of autism maintains Bleuler's characterisation of autism: withdrawal from social interaction into a heavily guarded protective space, poor communication, and fixed interests, there was a shift in the classification with the publication of the DSM-5 in 2013 when the newly coined term Autism Spectrum Disorder (ASD) emerged.

To date, this exists as an umbrella term for 4 sub-classifications; 'autistic disorder', 'Asperger's disorder'[4], 'childhood disintegrative disorder' and 'PDD-NOS (pervasive developmental disorder not otherwise specified) (APA 2013). Of critical import here, the DSM-5 included sensory idiosyncrasies – and relatedly a perception of the situated character of the condition - for the first time: "Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement)" (APA 2013, 299.0).

Suffice to say autism has been a continually shifting, reinterpreted, reproduced and reembodied condition since its emergence in the third revision of the Diagnostic and Statistical Manual of Mental Disorders (APA 1980). Autism is thus a shifting psychiatric classification used to categorise manifold ways of being. Philosopher Ian Hacking applies his notions of 'making up people'; whereby new psychiatric and biomedical classifications bring new ways of being a person into being, and 'looping effect'; the ways in which those classified interact with the classification, and thus that personal and categorical identities are co-constructed, to autism. When they interact, the classification includes new ways of being autistic and morphs, becoming a 'classification-in-motion' (Hacking 2007). As a result, the population classified becomes a 'moving target'.

As established there are many 'kinds' of autism (Hacking 2007), that is, many ways of being in the world in autistic ways; 'Aspie', Asperger's Disorder[5], neurodiverse or differently brained, savant, developmentally delayed, and so on. The classification is continually shifting and reproduced, in terms of both cultural understandings and the community of people who identify as autistic

[4] It should be noted that whilst it remains under the 'umbrella' of ASD, 'Asperger's Disorder' is no longer a designation used for diagnosis.
[5] Although Asperger's Disorder is no longer a subcategory of the DSM-5 classification, resulting in a proliferation of contestations and complex identity reformulations around those diagnosed with the condition. An exploration of this is beyond the scope of the thesis.

(Hacking 2007). Autism is a kaleidoscopic condition (Davidson & Orsini 2013) allowing a partial view of its colours before shifting and being expressed anew. This is not to question the existence of autism but rather to suggest that the condition of autism is still shifting. I argue that due to the significant epistemological uncertainty regarding the condition it will remain to do so for some time.

This thesis analyses a segment of this looping process from around 2012 to date and maps an emerging sensorialising of autism. Relatedly, I will argue that AM and its practices are a site of contemporary looping effects in autism. Whilst evidence for biomarkers for autism may yet emerge, conclusive causes, cures and even a model of autism understandably remain out of reach. Contributing to its kaleidoscopic nature is the diversity of expressions of autism, of creating one's world in autistic ways. As the saying goes, "when you know one autistic person, you know one autistic person". Therefore, this thesis does not only speak to the particular moment in time for which I was in the field, it focuses on the 'kind' of person drawn to and perceived to be affected by equine therapy. It makes no claims to speak to the experience of all autistic people or those they share their lives with.

Autism is popularly considered a neurodevelopmental condition and in the context of the disability rights movement and mad studies (McWade, Milton and Beresford 2015) a form of neurodiversity (Kapp et al. 2012). This change in identity, the increase of prevalence and proliferation of scientific research and advocacy work over the last few decades have all inspired social scientific interest in the autism matrix and the emergence of critical autism studies (O'Dell et al. 2016, Davidson and Orsini 2013). The social was considered somewhat distributed across people and things in the 1920s and has shifted to become viewed as a more individualised and biologised capacity of the individual (Hollin 2014). Within some neuroscientific knowledges, this has constituted a reduction of the social to individual brains. The formation of autism in the 1980s depended upon this individualisation of the social (Hollin & Pilnick 2014). Autism is the illness of our time (Hacking 2010) and therefore demands social scientific focus.

Great epistemological uncertainty surrounds the condition, giving it a productive indeterminacy. This provides a space for the condition to be used as a mirror for reflecting broader societal preoccupations. Autism is operationalised in the ongoing boundary work of establishing normal and pathological forms of human sociality and relatedness. As diagnoses of autism emerge more frequently across the world this becomes of relevance beyond the UK in focus here. Researchers have emphasised the historical and cultural particularity of this condition of relatedness in a range of contexts including: India (Brezis et al. 2015), South Korea (Grinker and Cho 2013) Italy (Cascio

2015), Brazil (Rios and Andrada 2015) and the USA (Sarrett 2015, Fein 2015, Solomon 2015). This thesis extends Ian Hacking's assertion that autism acts as a mirror for societal concerns (2010) by exploring its role in the enactment of current preoccupations within the UK. Moving on from exploring autism in the context of IT models of the brain, neuroscience and atomised selves, this thesis focuses on the sensorialising of the condition and the distributed, multispecies sociality promoted by local models of therapeutic efficacy. These relate firstly to current shifts away from Cartesian models of bifurcated psyche and soma, towards more embodied, holistic approaches of body and mind bound up in the sensorialising of selves.

Secondly and relatedly, the thesis explores uncertainties around human exceptionalism through horses' perceived therapeutic efficacy. This thesis provides more ethnographic detail on the processes involved in bounding local notions of what human sociality is and is not. In the context of my field sites I argue that those practitioners I got to know inadvertently grappled with a need to open up or shift the boundaries of sociality and humanness to evade dominant dehumanising discourses and acknowledge those capacities in the autistic people they got to know. I do so through exploring the models of therapeutic efficacy detailed by my interlocutors. These encapsulated local conceptualisations of autistic people as more natural, more sensorially engaged with the world and able to become more communicative and social by way of engagements with horses. This unintentionally reemphasised the animality of autistic people. This thesis argues that the emergence of sensory idiosyncrasies in situated conceptualisations of autism – enacted through the practices of equine therapy – provide a way of viewing these preoccupations in more detail. Suffice to say, autism continues to be the illness of our time, yet as I will show, in novel and heretofore unexplored ways. With the above points regarding the role of autism and equine therapy in the bounding of sociality and ultimately humanness in the UK briefly established, I explore the histories of both autism and equine therapy in the context of related literatures.

Enacting autism within shifting architectural-diagnostic ecologies

The proceeding section offers a contextualisation of the therapeutic ecologies or 'niches' in which the particular autism-therapy nexus I explored was enacted at my field sites. I argue that these were required for the emergence of this particular kind of autistic person. First, I detail features of the built environment, the ways they produced particular notions of the therapeutic efficacy of the 'natural' environment and differentiated particular constructions of autism. The section below traces the history of my central field site, Epona. This history forms the bones for the ethnographic flesh of this this thesis which illustrates a contemporary shift in how autism is framed: as a deeply embodied, sensorialised and socially situated condition.

Epona was based just over a mile from what was once the 'Brunswick Mental Asylum'. The central asylum building was in the midst of being gutted and transformed into luxury flats and was surrounded by newly built red brick homes. From the front of the asylum one looked out onto a large sweeping tree lined park. This extended out onto a pleasant view of what would have formed the extensive grounds of the asylum. It was a significant employer in the local area before the shift to de-institutionalisation. I met the finance manager for the local council's Learning Disability Services (LDS) who had been employed in various roles within LDS since the mid 1980s. "There's a woman in our office who worked there back in the day. Our offices used to be based there too. It closed in 1995 and everyone was rehoused in their own accommodation". She noted that in a similar situation to many of such council run services, and in a context of the shift to direct, and personal independence payments (PIP) for people with disabilities, the local LDS was being 'streamlined', and ultimately outsourced to a private, not-for-profit organisation.

Blueprints and letters detailing the history of its design and construction, and the ledger for purchases were available at the local archives from which I gathered the following. The Brunswick Asylum was built in 1897 within 70 acres of rolling parkland in which patients were hoped to be able to throw off the nervous overstimulation of life in the city. The main asylum building was comprised of four sections for specific types of patient, linked by corridors and forming a U-shape around a central administrative block. Contributing to its self-sufficiency, a farm - home to herds of sheep, pigs, cows and a team of working horses - was soon established on the grounds of the asylum for the production of food and other supplies.[6]

This design, with extensive grounds for residents to inhabit, and a farm for sustaining the institution with produce, was common in asylum architecture at the time due to their purpose as spaces of containment (Edginton 1997). The building of The York Retreat by William Tuke in 1796 heavily influenced ideas regarding the treatment of the mentally ill, with an emphasis on 'moral treatment'. Moral treatment, via careful operationalising of what were understood to be the therapeutic aspects of 'nature', was regarded as having the capacity to ease the grasp of insanity over an individual (Edginton 1997).

Asylums from the early 19th century onwards did not only inherit ideas about treatment of the mentally ill and the therapeutic effects of 'nature', they inherited the forms of architecture that were established by Tuke as therapeutic (ibid). Particularly relevant here are the features which allowed for an active appreciation of, and engagement in the natural landscape. Additionally, sites in which to place these buildings - atop gentle hills from where the landscape could be appreciated

[6] These animals and the spaces designed for their habitation would not be considered formally therapeutic for its residents until many decades after the establishment of the asylum.

more fully – were chosen to enhance their therapeutic utility (Hickman 2009a, 2009b). The architecture of asylums such as Brunswick built in the late 19th century thus became part of their discourse – one emphasising the importance of incorporating active engagement in the 'natural' landscape - owing to the significant influence of The York Retreat and the moral therapy enacted there (Edginton 1997, Hickman 2009a, 2009b).

I sought out Tanya and Danni two of the longest-standing volunteers at Epona to find out more. Both were parents to daughters that had been involved at the Epona centre for many years. Tanya was the mother of the Center Manager, Saffy. Tanya was a petite, blonde, quick-witted woman in her early fifties who spent most of her time volunteering at the centre, helping her daughter run the organisation. Tanya's first husband worked for the military and she had spent thirty years working in the care sector, which is where she met her second husband: the owner of a successful local care company. Danni, not working due to a disability, had volunteered in the office since her daughter started attending the organisation over 20 years ago. It is important to remind the reader that my study was based in the UK and as such an awareness of the role of class in the on-goings of the centres where I was based is necessary. This is particularly true of the UK's equestrian communities, where class and kinship (Cassidy 2002) and the military have been arguably central to the traditions and practices of those engaged in the breeding, training and trading of horses.

The staff team at Epona actively differentiated themselves from traditional realms of the equestrian community and particularly those usually involved in therapeutic riding. This was not only in terms of their methods of working with horses, but in terms of class and political persuasion. For the team, those involved in therapeutic riding were characterised as upper middle, to upper class - and predominantly female. These women were assumed to be from the equestrian echelons with wealthy husbands and who, not having to work, had plenty of time to volunteer in charitable causes. This aim of differentiation was due perhaps to the team's proximity to the communities they sought to distance themselves from. Many of the Epona team were from middle class families with military backgrounds.

I inquired about the asylum, and whether any of the residents had attended the centre. Tanya told me that whilst she did not know much about Brunswick Asylum prior to its current situation within a repurposed dairy farm, Epona had been based at Parkhill House, a local hospital for what were then termed 'handicapped' children.

> Tanya: [Parkhill] was different to Brunswick. Separate. That's a different place, Brunswick. I'm not sure how they separated it. Can you remember, Danni? Brunswick and Parkhill House? Was one side learning disabilities and the other a mental hospital?
> Danny: Brunswick was a mental hospital. Your typical old mental institution.
> Tanya: Yeah, psychiatric.
> Danny: And it was a whole community at Brunswick. They had a church and Parkhill

> was more like a, you know back in the day people with Down's Syndrome, anything like that. Parkhill House dealt with that sort of thing. Physical disability.

Not long after the erection of Brunswick Asylum to annexe and care for those suffering from some form of mental ill-health, the local council established Parkhill House for the care of those considered to have more permanent 'physical' disablement or unsoundness of mind.

This indicates an architectural separation of those experiencing mental ill-health, from the permanently mentally and physically handicapped. Danny's comment about "the handicapped" as opposed to the mentally ill highlights how architectural-diagnostic structures at that time framed and were designed around the containment of *either* abnormality of soma *or* psyche. I here highlight how the architectural-diagnostic structures and therapeutic practices separating these somatic *or* psychiatric conditions that are the focus of medical *or* psychiatric sciences and the Cartesian dualism upon which these distinctions have been based, have shifted. This is both in the context of the condition of autism itself and in the centres that formed at my field sites. Autism troubles these dichotomies in its current configuration as a life-long neurodevelopmental condition yet one under the auspices of a psychiatric diagnosis.

These concerns over how to differentiate kinds of disability and ill-health are not isolated to autism however. This is intimated by Tanya and Danni's hesitancy and uncertainty regarding how to define the differences between Parkhill House and Brunswick Asylum. As I will argue, the widespread acceptance of uncertainty as definitive of autism is operationalized in the working out of these shifts, and the condition continues to be used as a reflective microcosm. As I will go on to show, these reflect broader shifts in certain scientific, social scientific and societal contexts. These shifts are producing deeply felt layers of uncertainty around therapeutic interventions, tensions between curing and coping, and the bodily and interpersonal aims practitioners attempted to affect. My interlocutors grappled with these concerns on a daily basis.

Parkhill House was a stately home built in 15 acres of parkland in 1720 by a local MP, so-named for its position on the crest of a gentle hill. This was a common architectural choice of situation for such buildings of this era due to the perceived health benefits of being afforded a view across the 'natural' landscape (Hickman 2009a, 2009b). The centrality of the therapeutic effects of the environment in the data collected and explored in Chapters 1 and 2 speaks to renewed scholarly interest in 'therapeutic landscapes', for example in the context of UK care farms (Gorman 2017). The photograph below gives the outlook from the front of Parkhill House, giving an idea of the quite clearly landscaped, yet 'natural', grounds enjoyed by residents. These grounds were often used as laboratories for their residents' active experimentation on nature (Hickman 2014). This active experimentation on the therapeutic effects of the 'natural' landscape for clients, and

therapeutic horses, was key to practitioners' realisation of what they defined as efficacy in the context of my field sites as explored in Chapter 1.

'Parkhill House' (Anon 2016)

Built in the 1720s and prior to the effects of Wordsworth's Romantic movement on architectural design, these grounds were landscaped not for being moved through on foot, but rather for being ridden through on horseback. In 1913 the mansion was sold to the local council for use as a home for 'the handicapped' and reopened as such again in 1919 after being requisitioned as a hospital for soldiers during World War 1. Parkhill House continued to operate as a residential home. In a very similar origin story to other such sites around the UK, in 1965 a group of volunteers clubbed in to purchase two ponies, Bill and Ben, and began to offer riding sessions for the residents there. In 1971, the group formalised their activities under the auspices of the overarching national therapeutic riding organisation that I here refer to as TRAD.

Of note here is that when autism emerged as a psychiatric category, children classified by the condition lived not at Parkhill House where people with physical and learning or developmental disabilities (then referred to as 'the handicapped') called home. Instead, in the context of autism emerging as a psychiatric disorder in the late 1940s and enshrined in the DSM-III (APA 1980) following the work of Michael Rutter, people with social and communicative disorders lived at the Brunswick Asylum. In 1971, the same year as Epona began to operate as a TRAD organisation, it was decided that children should no longer be housed with the adult population at Brunswick Asylum, and a separate children's unit was established in the grounds of the institution by the local educational authority. This was designed to serve children with psychiatric conditions, and latterly autism, from across the whole region. An old Super8 film of the unit directed by a staff member documents a specific section of the unit for what the narrator called

"non-communicating children". I sought out Pam, who had been involved in the delivery of riding sessions at Parkhill House and asked whether any children from the unit at Brunswick Asylum – that would latterly be referred to as 'the autism unit' were taken for riding sessions. "Yes, there were" she told me. "We had a wide range of autism and epilepsy. There were a lot of autistic children actually".

Both Brunswick Asylum and Parkhill House began to be wound down in the early 1990s in the move to care in the community and by 1995 both had ceased to operate. Residents at each site were rehomed in and around the local town and cared for by a range of services paid for and delivered directly by the county council's LDS. With Parkhill House closing, Epona was tasked with finding a new site. In this rural context, rehousing proved relatively easy, and in a shift from a site designed for enhancing the health of its human residents to one for the benefit of a herd of dairy cows, the organisation was offered a twenty-acre space and barn within a volunteer's family farm. Local special educational needs (SEN) schools and newly established residential care homes and day care services run by the council began to bring clients to the new site where it remains to this day. This now included autistic people who were no longer housed together in the children's psychiatric unit but interspersed around the local area alongside other people with non-psychiatric conditions.

The history of these sites is illuminating. Firstly, it helps to establish the longstanding relevance of the 'natural' environment and architectural spaces in which the centres were based to notions of therapeutic efficacy, and not only for autistic people. Secondly, as the thesis explores contemporary enactments of autism by the therapeutic methods in operation, it provides a historical context for the shifting of autism from a psychiatric condition to a neurodevelopmental disability. It also provides context for the more contemporaneous shifts in autism that this thesis seeks to evidence. That is, of autism as a condition increasingly framed by my interlocutors not as a purely neurodevelopmental condition, but instead as a sensorially-mediated one. The next steps in the local deinstitutionalisation process - constituted by the shift to personal independence and direct payments for accessing services - will be detailed in a section below. For now, I will return to detailing the research literature at hand.

Social scientific research has understandably focused on these fascinating shifts in classification and moving targets, using autism as a mirror for social scientific explorations of societal processes more broadly. Some have detailed the role of autism within sites of biomedical knowledge production. Autism has been explored as a 'biomedical platform' for underscoring sex differences in a range of scientific researches (Gillis-Buck and Richardson 2014). Des Fitzgerald has explored the ambivalent dynamics of hope and uncertainty within neurobiological autism research (2014). Martine Lappe (2014) details 'taking care', a mutual giving and taking enacted by researchers and

participants in long-term cohort studies exploring gene-environment interactions in autism with the anticipation of more knowledge in the future. Building on Hacking's (2007) assertion that autism acts as a site of looping processes, Daniel Navon and Gil Eyal (2014) show how autism genetics functions as a 'trading zone' allowing the exchange of knowledge, biomedical objects and resources between genetics and psychiatry.

Others have explored the effects of such biomedical knowledges on autistic identity and the politics of models of autistic disease versus neurodiversity. The effects of autism on the production of biomedical knowledges beyond neuroscience have been explored, as noted in the literatures above. Yet much existing research exploring the effects of biomedical knowledges on public constructions and experiences of the condition engages predominantly with neurological framings of autism evidenced by titles such as *Worlds of Autism: Across the Spectrum of Neurological Difference* (Davidson and Orsini 2013). Others have traced the emergence of the autistic community through the widening of the autism spectrum, the strengthening of the neurodiversity movement, and the explosion of technology which facilitated this movement (Bagatell 2007, 2010, Solomon and Bagatell 2010). Broderick and Ne'eman have discussed the tensions between the discourses of neurodiversity and deficit (2008).

As I will show, whilst my interlocutors engaged with some neuroscientific knowledges in their discussions, it was not only the brain but instead the whole body-self-world, mediated particularly through sensory experience, that was used to enact autism. Whilst neuroscientific knowledges can be engaged with by a range of publics, they can also be ignored and do not necessarily come to define people's understandings of themselves (Pickersgill 2013). As was the case in the context of my field sites, neuroscientific knowledges were engaged with and at times contested rather than being passively absorbed. Situated translations informed by personal experiences made use of authoritative neuroscientific languages to find a voice to express discontent with the epistemological framing of the condition. This was done in novel ways, as a composite of other knowledges of the body and self, including other biomedical knowledges.

My interlocutors moved between knowledges gained through their experiences with, and as, autistic people and readings from a range of researches from across neuroscience, immunology, endocrinology and more popular sources. These diverse knowledges were mingled into a multifarious model of therapeutic efficacy by the AM founders. I suggest that this contesting, stretching and composting of a range of biomedical knowledges into a model of therapeutic efficacy helped my interlocutors account more fully for their experiences of the condition as radically embodied and extended through the social and 'natural' world. This thesis thus builds

on existing reflections on the production of scientific knowledges of autism and their effects on understandings of sociality and humanness detailed above. I argue that my interlocutors' reports suggest a further step in the morphing and looping of autism, towards a sensorially-mediated condition of the entire body-self-world that allowed them to contend with autism as a condition that was at once psychiatric, neurodevelopmental and bodily beyond the brain. Whilst an extensive autistic autobiography genre exists (see Grandin and Scariano [1986] 2005, Grandin and Panek 2014, Higashida 2013, Mukhopadhyay 2000, Tammet 2006, Williams 1998, 2005 for examples) less has been written about the embodied experience of autistic people within the anthropological literature (see Belek 2019, Milton 2014, 2017, Milton and Sims 2016).

Sensory Symptomatology, Embodiment and Phenomenological Approaches to Situated Sociality

Within the autistic autobiography literature sensory idiosyncrasies have been reported to be the most disabling aspects of autism (Chamak et al. 2008). These include idiosyncrasies in the traditional 'five senses' of sound, vision, taste, smell and touch. Also included are proprioception – the sense of one's position in space, kinaesthesia – the awareness of one's movements in space, synaesthesia – the 'confusion' of one sense being experienced as another, and difficulties in 'processing' information from more than one modality. "Sensory overload" and "meltdown" are terms used frequently by autistic people, including those I got to know. Autistic advocate Temple Grandin emphasises the importance of sensory issues in autism. As she notes in her book *The Autistic Brain* "researchers have done hundreds of studies on autistics' problems with social communication and facial recognition, but they have neglected sensory issues… my top priorities for autism research are accurate diagnoses and improved treatments for sensory problems" (Grandin and Panek 2014, viii).

As noted, it was only in 2013 that sensory issues were incorporated into the autism classification in the DSM-5 (APA 2013). As will be established below AM was designed around sensory issues and particularly the diagnosis of "sensory processing disorder" (SPD). The underlying notion that someone can process the world through the senses in a disordered way promotes a conceptualisation of the senses 'proper': a 'normal', standard, non-pathological model of sensory experience and indeed reactivity upon which to frame the diagnosis. This understanding promotes the senses as preconscious and precultural (Guerts 2003) existing in the realm of the 'natural' 'body proper' and a related standardised system of nervous system pathways. However, a significant body work on the anthropology of the senses has emerged exploring a diversity of sensorial ways of being in world across cultures (see Desjarlais 1997, 2003, Hinton, Howes and

Kirmayer 2008, Howes 2005, Howes and Classen 2014, Ingold 2000, 2011, 2012, Laplantine 2015, Pink and Howes 2011) and will be explored in Chapter 2.

Many advocates - in line with a phenomenological approach to intersubjectivity - promote autism as a condition situated and produced in interactions with others on and off the spectrum (see Milton 2012, Shore 2003). My own autistic interlocutors told me that social anxieties compounded by a lack of understanding of autism could produce sensory issues and vice versa, that sensory issues caused idiosyncratic self-regulating behaviours known as "stimming" which could cause social anxieties and exclusion. These melded sensorial and social bodies move the conversation beyond simplistic conceptualisations of 'intersubjective' deficits. Indeed, they problematise theories that reduce relatedness to the neurological processes of isolated brains existing somewhere above or outside social worlds, evidenced by theories of faulty mirror neuron circuits (Gallese, Eagle and Migone 2007).

A handful of ethnographies of embodied experience in autism have been published in recent years promoting alternative forms of sociality. Phenomenologically informed research has characterised role-playing gaming events as therapeutic folk-healing practices transforming the condition from a source of isolation to one of commonality (Fein 2015). A similarly embodied approach has been taken to reflect on the alternative means used by autistic people to relate and attune to those around them (Hendriks 2012). The joint embodiment enacted between parents and children with autism, and the ways they create enabling 'prosthetic environments' where unique forms of personhood can be recognized has been explored (Hart 2014).

The ways that therapy dogs and autistic children enter into a transformative 'ontological choreography' whereby dogs facilitate communication, enacting new forms of sociality with family members through joint embodiment has been researched (Solomon 2012). This work, in line with posthumanist scholars, decentres the individual autonomous subject, acknowledging the agency of both objects and animals, in the production of social relations. Published in the context of the ontological turn, it also promotes a conception of sociality as something enacted in practice. This emerging distributed and embodied understanding of sociality provides space for being autistic and social and goes some way to assist in comprehending my interlocutors' perceptions of therapeutic efficacy in the context of equine therapy and autism. The section below focuses on the themes at play in perceptions of the lively effects of horses in facilitating relatedness in autism. I show that the emergence of wider acknowledgement and awareness of sensory idiosyncrasies was necessary for the establishment of AM in the UK context and go on to argue that equine therapy relatedly exists as a site of looping effects for the autism classification.

The emergence of an autism-specific intervention and the UK translation of "sensory work" methods

After moving to their new site on the dairy farm, Epona continued to operate as a registered TRAD organisation. Concurrently AM was being established and formalised in the USA through the founding of a charitable organisation by Englishman 'Louis's in 2007. After their son received a diagnosis of pervasive developmental delay – not otherwise specified (PDD-NOS) Louis and his wife - a psychology professor at a prestigious local university - employed an Applied Behavioural Analysis (ABA) practitioner.[7] Louis told me:

> It was all about deficit, disorder, dysfunction, disease. And I thought, what is the other side of the story? There must be successful adult autists out there, and not just the Asperger's ones. Where are they? So, I deliberately went on a hunt to find the most successful autistic person I could. The first thing I did after we got the diagnosis was contact Temple Grandin and ask her for an interview. We went up for an interview and I asked, 'how does my son become successful like you?' She gave me a really straight answer and told me three things to do. 1) Follow the obsessions: you've got to start by following the child physically, emotionally, and intellectually. Including not stopping them from stimming. Because all of the clues to the brain are in there. 2) Get outside in nature because there's no bad sensory triggers outside 3) and let him move, move, move, because mostly they are kinetic learners. And I got back here, and the behavioural therapists weren't doing that. So, I thought well I've got a choice. I either do what these people are doing, or I take the risk of doing what the autistic person told me to do? I think I'll do the latter.

After spending significant periods of time outside, his son had gravitated towards the horses on his neighbour's ranch.

Himself a huntsman and horse trainer in the UK before moving to the USA Louis was comfortable putting his son up on the oldest and calmest horse's back. Louis felt that riding held a powerful effect in helping his son to stay relaxed, limiting meltdowns and ultimately allowing him to engage more easily with others around him. He suggested that his son and the horse had what he called a "direct line" to one another. After employing Amy – a young woman with a psychology degree from the UK – to help care for his son, the organisation began to develop AM and to offer it to other children with autism from the local area. The team then began to look for some scientific backing for the new method they had developed.

As Amy put it, "so, the important point here is that AM started as an approach based on observing kids and what worked for those kids. We later sat down and did a lot of research and found that there is a lot of science supporting why AM works". Louis echoed this bottom up approach in which the team cobbled together various epistemic resources; research articles, popular science

[7] ABA is the only autism therapy widely accessible through health insurance in the USA and is held to be the only intervention with conclusive scientific backing.

books and autistic and parental autobiographies as the basis for their local theories of autism and relatedly the backing for AM. He told me, "it was not me saying 'I've got these clever ideas about oxytocin and cell danger response' and so forth. It was just that we noticed what worked and what did not". In 2010 Louis and others began building AM which would later travel the world.

In 2012 Louis visited the UK to deliver workshops and certification in AM, including one at Holistic Horses, a small establishment which offered sessions for children and adults with a range of educational and emotional needs including autism. During this trip to the UK, Louis trained Chrissie from Epona, and Paul trustee and practitioner at Pegasus, in AM. Pegasus, unlike Epona, had been established first and foremost to offer horse-based sensory therapy for the treatment of children on the autism spectrum. This was one of a handful of such organisations emerging at this time in the UK. Pegasus had existed in several permutations at a range of sites, under the control of a shifting board of trustees, prior to Paul's training in AM.

It now ran under a new name within a donated portion of a small arable farm. Day to day running was done by four staff members, three of whom were between the ages of 16 and 25. This small team was assisted by voluntary board members, including Paul, the parent of a son with autism, and branch officer for the local branch of the National Autistic Society (NAS). Paul no longer delivered therapeutic sessions himself, being involved more in the management of the organisation.

Pegasus described itself as offering sensory therapies for children with sensory and communicative issues. This was the smallest of the sites, working with the fewest clients, and serving only children. The centre did not aim to teach children how to ride, but was instead entirely focused on enhancing emotional, relational and communicative well-being of children with a range of social and emotional needs via horse-based "sensory work". TRAD sessions were available for autistic people in this region of the UK. However, by being the site for one of Louis's first training visits to the UK the area was seeing a proliferation of new forms of horseback therapy. These were particularly offered by organisations established for the sole provision of "sensory work", and predominantly for autistic children.

Both methods - TRAD and AM - were practiced at Epona. Chrissie told me that TRAD was mostly used for her older clients with autism. When I asked why, her response was that they were "too institutionalised" for back-riding. Her perception was that they were too inflexible and crystallised in their behaviour because of a life lived within residential care and with limited, if any, early intervention. The pressure towards change and transformation bound up in AM was deemed by Chrissie to be far too traumatic to introduce to her older clients.

As I watched and took part in TRAD sessions I learned that therapeutic efficacy for older clients was constituted as "relaxation", "getting out of the house or care home", or "meeting other people". This was in contrast to AM sessions that promoted a potential for radical changes in behaviour, such as facilitating first uses of speech and other forms of communication in young children. Here I will reiterate part of my argument that particular practices of AM constituted a behavioural niche that was required for a sensorially-mediated 'kind' of autistic person to be enacted in the context of equine therapy. This behavioural niche is the focus of chapters 3 and 4 and constitutes the second of three such niches detailed by this thesis.

To summarise, each of these two types of intervention - TRAD and AM - inculcated a different disposition in the client through the use of diverse equipment and related horse training practices. These were notably constructed around age and perceived level of flexibility of the client. Whilst the ways in which different therapies related to distinct configurations of autism is of note, it is AM that was designed specifically for autism, and particularly around the sensory needs of autistic people. The thesis focuses on AM for its ability to tell us more about how autism in particular was enacted within my field sites and what these enactments tell us about contemporary understandings of the condition.

Next steps in deinstitutionalisation, care sector deregulation and the proliferation of outsourced services

Though emboldened and enthusiastic about offering AM, the Epona team experienced a range of issues that constrained its establishment. TRAD, the organisation through which Epona received its certification to operate as a therapeutic riding centre, was not in support of the AM practice of double-riding deeming it unsafe. Many of the children were uncomfortable with the sensation of helmets. In line with the AM philosophy of "following the child" children were allowed to ride without them if necessary. This did not conform to TRAD's health and safety requirements. The method also necessitated a range of equipment not approved for use by TRAD. These issues facing the team at Epona were ultimately produced by the organisations' insurance company only covering clients whilst riding singly, in standard equipment, and wearing helmets.

Epona's client base had been shifting over the last few years and they now offered fewer TRAD style physiotherapy sessions for people with physical disabilities such as cerebral palsy. Epona now instead worked predominantly with children with learning disabilities and autism, conditions subject to far less regulation by TRAD medical advisors. As the years went by, these issues compounded an already uneasy relationship between Epona and TRAD. The latter was seen by the former as out of date, old fashioned, and snobbish. TRAD viewed Epona as unruly, experimental, and potentially risky.

In 2015, on their 50th anniversary year, Saffy led Epona to almost complete independence from TRAD, remaining as an associate member rather than a branch of the organisation, leaving Epona less subject to the stringent TRAD regulations and control. This associate membership also meant that Saffy could bring in a range of new outsourced services on site, which she had begun to do when I arrived there. A small hut, funded by a donation from the parents of a client, had been erected at the end of the playpark on the way into the woodland trail for use by self-employed therapists to offer a range of services for parents and members of the public.

The above introduces a shift in the treatment, particularly of children with autism, at Epona, a move away from the regulation of TRAD, and the emergence of a range of new therapies on offer there. This occurred simultaneous to a broader governmental regulatory shift away from centrally controlled learning and disability service commissioning and provision (council run residential and day care groups) towards direct payments for the use of individual consumers to pay outsourced, privately run therapy service providers. This was related to an emerging, concomitant ideology of so-called 'person-centred care' that was a continuation of the withdrawal of state care provision for mental illness and disability instigated by processes of deinstitutionalisation (described above in relation to the architectural spaces of care). How care services operated and who for, via the personal independence payments reassessment process, resulted in the redefinition of who was considered to experience sufficient levels of disablement to be eligible receive government support (Roulstone 2015).

The move from centrally controlled service provision to paying private companies with direct payments was thus a shift in motion throughout my fieldwork period and one significantly impacting the lives of my interlocutors with autism and their families. The reassessment of their entitlement to personal independence payments (PIP) caused much stress and anxiety for the young adults with autism that I got to know. Whilst people were being given the right to choose what type of care they wished to purchase, many struggled with the increasing responsibility and bureaucracy involved in firstly accessing and maintaining direct payments, and secondly finding and securing appropriate care.

Florence, the owner of Choices - the organisation now bringing clients to Epona as volunteers - had set up the company after a career in care management in the area and knew the local care scene well. She had seen radical changes in the last few years following substantial government cuts and was very concerned. Outsourcing was seen as the best way to deal with these reductions yet the companies emerging to meet the new demand were themselves racked by uncertainty. After securing county council contracts some organisations were finding it impossible to function within the extremely tight budgets required to remain competitive in the commissioning process. Many were handing back contracts to the council, leaving already vulnerable people without

adequate care, and contributing to a brewing care crisis in the area.[8]

Epona was therefore no longer one of a handful of charitable organisations that could fund themselves primarily with the support of charitable grants from trusts, foundations and government departments as before. It was working hard to free itself from the regulation of TRAD, in some degree, to allow for the flexibility required to remain dynamic and competitive within an increasingly crowded marketplace. Interest rates were stagnant and charitable funds and government grants relatedly minimal, and funders required charities to become more dynamic and self-sufficient in terms of income generation. Saffy had to market the organisation to a broader clientele, and in so doing, bring in outsourced contractors to provide a new breadth of therapy options. By outsourcing, the risk shifted from Epona to the emerging companies and Saffy and the team could tinker with what worked or not. Epona was shifting from charitable organisation offering a resource for 'service users' to a business designed for attracting 'clients' and there was a related proliferation and continual testing of new outsourced services. This created increasing levels of uncertainty and stress for the staff working there as discussed in Chapter 4.

Empathy, Theory of Mind and Human Exceptionalism

I have established that the care sector in the area of the UK my research was based was the subject of considerable uncertainty much like the condition of autism. However, there exists a general consensus around the framing of autism as a social and communicative disorder with related deficits in intersubjectivity and empathy (Silverman 2012). There are long-standing - and problematic – assumptions of ontological 'thinness' (Hacking 2009a, 2009b) in autistic people, as if lacking 'thick' inner worlds, informed by rich intersubjective experience. However, this is not supported by autistic advocates such as Temple Grandin. She notes that "our bodies cry out for human contact but when contact is made, we withdraw in pain and confusion" ([1986] 2005, 36). Donna Williams (1998: 59) notes an "intense uncontrollable empathy", especially when seeing another being hurt, perhaps due to the embodiment of a more sensitive system of engaging in one's human and built environment.

The above quotes usefully highlight a common differentiation between *affective* and *cognitive* empathy, a differentiation arguably produced by a more general bifurcation of the cognitive from the affective inherited from Cartesian dualism. Affective empathy is aligned with 'lower', 'bodily', 'precognitive' or 'sympathetic' forms of intersubjective engagement in biomedical, lay, and

[8] Restricted budgets meant that the new public –private organisations taking on new contracts were imposing unfeasible restrictive working conditions. In 2017, after I had left the field, it was reported that as the local council's learning disability services was taken over and staff received their new terms and conditions, over 200 people resigned, and industrial action was planned.

anthropological use. Grandin and Williams refer to the affective variety whereby one viscerally feels for the other, and in so doing steps into the shoes of another and engages in a level of understanding. This affective empathy can be more easily aligned with the popular notion of *sympathy*. In the context of autism research, empathy has until very recently been primarily used to refer to cognitive empathy, restricting any acknowledgement of the (affective) empathic abilities of autistic people.

The bifurcation between cognitive and affective empathy is inherited from the way in which empathy entered the psychological, and public lexicon. Empathy entered everyday language in 19th century Germany, France and England conquering much of the ground covered previously by the term sympathy (Jahoda 2005). Sympathy was beginning to be discussed extensively in the context of the moral philosophers of the 18th century, promoted by David Hume to be *the* aspect of human nature that held society together (ibid). Sympathy referred to an affinity, not only between people, but between people and things, for example when an illness was passed 'sympathetically' to another (ibid). The word 'empathy' was taken from the Greek *empatheia – em* meaning 'in', and *pathos* meaning 'suffering or passion'. Rather than being translated directly from the Greek however, empathy entered the English language via American psychologist Edward Titchener in his translations of the work of psychologist, Theodor Lipps. Lipps had taken up the term in 1903 in his psychological exploration of the perception of art. Rather than translating from the Greek, Lipps had used aestheticist Robert Vischer's translation from the German, *Einfühlung*, meaning 'emotional projection'. Vischer used the term to explain the feeling one experiences when appreciating art visually (ibid).

With its roots in German aesthetics, 'empathy' entered the English language via Titchener's translation of Lipps' later meditations on *Einfühlung*. However, Titchener failed to pick up on Lipps' meaning which maintained a similarity to sympathy, and his use of the term to refer exclusively to artistic appreciation. Thus 'empathy' took the ground of sympathy, whilst abstracting its meaning from an affective, bodily experience - and importantly one that could occur in relation to things - to a cognitive and vicarious experiencing of 'being in the shoes' of another person. Empathy maintains this specific meaning in common parlance and is now defined by the American Psychological Association (APA) as vicariously understanding the experience of another from *their* perspective, rather than one's own frame of reference (VandenBos 2007 cf Komeda 2015). Much autism research has until very recently focused on the cognitive aspect of empathy, which as Hannah Freud suggests (Qvortrup 2003 cf Bubandt and Willerslev 2015) can be understood as stepping into the shoes of another, and then back out again, gaining understanding yet without necessitating any affective resonance.

Without abilities for empathy and sociality, it is perceived that one cannot be a "whole person" in society (Silverman 2012) positioning autistic people, considered incapable of these abilities, as somehow less than human (McDonagh 2013; Hendriks 2012). Empathy entered discussions of autistic symptomatology alongside ToM deficit approaches in the 1980s when Lorna Wing, a parental advocate and autism expert noted: "lack of empathy, single-mindedness, odd communication, social isolation, over sensitivity." (Wing 1981, 121). The slippery category of empathy has been the focus of interest within anthropology (Smith 2008; Hollan 2008, 2012; Hollan and Throop 2008, 2011; Bubandt 2009; Bubandt and Willerslev 2015; Willerslev 2004, 2007; Despret 2004) and will be explored in detail in Chapter 4. Theory of Mind (ToM), a conscious and reflective ability to put oneself into the shoes of another, is aligned with cognitive rather than affective empathy and considered to be one of the central cognitive constructs involved in the production of autism (Lai, Lombardo and Baron-Cohen 2014).

Of significant import here is the use of ToM – that bifurcates between thinking and feeling - to support human exceptionalism, acting as a tool to delineate human and animal abilities (see Penn, Holyoak and Povinelli 2008). However, ethological studies have widely shown that primates deceive others (see de Waal 1992) a skill which relies on an ability for ToM. More recently corvids such as jackdaws (Ujfalussy, Miklósi and Bugnyar 2013) and squirrels (Steele et al. 2008) have been added to the list of non-human deceivers. These findings suggest that the use of ToM to underscore human exceptionalism is being questioned. The properties understood to constitute and produce humans' exceptionalism from other animals are being re-evaluated, evidenced by a proliferation of popular texts such as *What Makes Us Human?* (Pasternak 2007) and *The Book of Humans: The Story of How We Became Us* (Rutherford 2018). Suffice to note, prey animals and horses in particular have shown little sign of embodying theory of mind, or the ability to deceive. The perception of horses' specific *inability* to deceive becomes a topic of interest in Chapter 4. The chapter deals with these interplays of the usefulness of the category of empathy, perceptions regarding human and animal forms of empathic resonance and capacities for incongruence.

As Canguilhem intimates, "man sometimes marvels at the living and sometimes, scandalized at being himself a living being, forges for his own use the idea of a separate kingdom (Canguilhem [1965] 2008, xix). This chapter establishes that autistic people and the distributed multispecies relatedness perceived to be emerging from autistic forms of sociality are engaged in the weakening of the boundaries of this kingdom shored up by ToM. The phenomenal reports of children "opening up", expressing love through the use of language no less, give a tangible pragmatic space in which to see this process in action. It illustrates how humans became animalised, and animals

became humanised in the context of my field sites not only through layered notions of therapeutic efficacy, but via shades of mimicry, stepping into and out of human and animal others' shoes, and performative cloaking and asserting one's intent at play[9].

Just as Foucault helped us to see 'no madness, no reason', contemporary scholars are helping us to see 'no animal, no human' (Latimer 2013). The question of the animal has abounded in Enlightenment thought since Immanuel Kant asked, 'What is man?', and the answer of the Constitution; a bounded, individual, autonomous subject was given. The idea of this sovereign subject allowed for the 'othering' of the irrational animal (Latimer 2013). Language always features centrally in disputes about the human-animal divide due to a philosophical and scientific tradition of human exceptionalism firmly resistant to acknowledging that animals have complex communication systems just as humans do (Westling 2011). This is not to equate, or suggest any horizontality between, humans and other animals but rather that it is becoming more widely accepted that particular animals - humans included - have their own exceptional modes of engaging with others within and without their 'group' or 'species'.

The phenomenology of Merleau-Ponty is useful in destabilising the human exceptionalism of the constitution in his focus on language as a gestural enactment, rather than a disembodied activity of the mind (Westling 2011). "The spoken word is a gesture, and its meaning, a world" (Merleau-Ponty 2000, 183) because "it is through my body that I understand people, just as it is through my body that I perceive 'things'. The meaning of a gesture thus 'understood' is not behind it, it is intermingled with the structure of the world outlined by the gesture" (Merleau-Ponty, 2000: 186). *The Visible and the Invisible* (1969) describes a kinship – in very broad terms - between humans and animals (Westling, 2011) that emerged strongly from the data collected for this project. The emergence of autistic sociality is agued to have only been possible via the facilitation of nonhuman actors; the Internet, and computers (Hacking 2010, Bagatell 2010, Ochs & Solomon 2010). This thesis aims to speak to broader societal concerns bound up in ongoing boundary work around human sociality. It extends the literature by exploring how autism is used as a microcosm for working out the role of lively, nonhuman animals in the production of sociality and relatedness.

There exists a constructed discontinuity between humans and nonhumans, one that sustains the kinds of knowledge underpinned by nature-culture, subject-object, body-mind, individual-society polarities (Latimer & Miele 2013). It is these discontinuities and increasing uncertainties regarding

[9] There are direct allegories to the animalising of the human 'other' in the literature on slavery and race relations (see for example Claire Jean Kim's (2015) *Dangerous Crossings: Race, Species and Nature in a Multicultural Age)*. However, there is not the space to go into these in any detail here.

their easy differentiation from one another that my interlocutors worked so hard to understand. For Durkheim and even for Weber 'the social' includes only rational human actions, excluding habituation. This learning of new bodily dispositions is considered to be one of humans' 'more animal' traits (Latimer & Miele 2013). Donna Haraway (2003, 2008, 2016) and other posthumanist scholars have contributed significant considerations of the affective aspects of the coming together of human and nonhuman. This takes us from a 'politics of nature' (Latour 2004) to a 'politics of culture' (Latimer & Birke 2009).

As Kirskey and Helmreich (2010) suggest, multispecies ethnographers are situated at the ubiquitous spaces where the boundary between nature and culture are perceived to have broken down. Having co-evolved together over millennia, the biocultural interweaving of humans and horses is incredibly tight. These relations have been usefully defined as bound up in British constructions of class and kinship (Cassidy 2002), interspecies 'meeting points' (Birke 2017) and relations of trust between mindful actors (Birke and Hockenhull 2015). These human-horse engagements constitute cultures replete with discourses enacted through, for example, training practices (Birke 2007, 8) and which in certain contexts become highly gendered (Birke and Brandt 2009, Hurn 2008). People's associations with horses are reworking long held divisions between human and nature, nature and culture (Latimer and Birke 2009) and in the Mongolian context between subject and object (Irvine 2014).

The co-evolution of horses and humans exists in variegated layers of temporality; in evolutionary terms over millennia and in momentary instances of attunement that combine to facilitate the embodied reorientation involved in learning to ride a horse over months and years. For a long time, it is an uncomfortable engagement, suggesting a messier intermittent, partial engagement between human and horse than that suggested by a Latourian 'flat ontology'. As Haraway suggests, an,

> embodied communication is more like a dance than a word: the flow of entangled, meaningful bodies in time - whether jerky and nervous or flaming and flowing, whether both partners move in harmony or are painfully out of synch or something else altogether-is communication about relationship, the relationship itself, and the means of reshaping relationship and so its enactors. (Haraway 2006, 111)

Using Haraway's term, Maurstad et al (2013) look to the naturalcultural 'becoming-with' of the human horse relationship, suggesting that through a process of intra-action, rather than inter-action, we perform across the nature-culture divide. Relying upon the Baradian (2007) notion of intra-action, the authors refer to the mutual reorientation of both horse and rider through time. The horse is not passive in this relation, but active and effects a change in the body-language and physical sensitivity of the person. For Maurstad et al. this is not a simple practice of inter-action,

with a joining of distinct entities, but a mutually constituted ongoing collaborative practice, or intra-action that is enacted from within bodily movements.

Horses and humans in this context engage in highly affective, embodied ways. The rider's body learns from the movements and behaviours of the horse, and vice versa. However, Joanna Latimer (2013) importantly emphasises the partiality and intermittence of these relations of what she calls 'being-alongside' between horses and humans. The notion of being-alongside is useful here in exploring the asymmetrical relations bound up in the processes of domestication of both humans and horses enacted through equine therapy and explored in Chapters 1 and 4. This process of co-domestication between human and horse is for Despret an example of an embodied empathy, a co-*respondence* "which describes feeling/seeing/thinking bodies that undo and redo each other reciprocally though not symmetrically, as *partial* perspectives that attune themselves to each other" (Despret 2013, 51). Therefore, for Despret, empathy is not experiencing with one's own body what the other experiences, as per the vicarious understanding denoted in much discussion around empathy and sympathy dating back to David Hume's references to 'fellow feeling'. Instead it is "creating the *possibilities* of an embodied communication" (ibid, 51).

Bifurcated understandings of terms such as 'empathy' (cognitive/affective) and 'intersubjectivity' (self/other) reinvoke the modern 'Constitution' (Latour 2005) that separates: agentive human/passive animal, brain/social, cognition/affect and so on. These distinctions are unhelpful in exploring the equine therapy context which suggests associations enacted in practice between human and horse, individual brain and social world. This thesis explores the attunements of horses and humans in the context of my field sites and details a complex body-self-world enacted by my interlocutors' engagements with the therapeutic horses. Taking these reports seriously, each chapter details layers of attunement that unfolded as I got to know my human and equine interlocutors. I explore these resonances as being enacted across open systems of relations and at all times ask what is at stake therein. As will be detailed below, this approach allows for asymmetrical relations to be acknowledged and explored in depth, without having been assumed *a priori*.

I above intimate that via engaging with human-animal studies and maintaining a focus on practice (Mol 2002) alongside my interlocutors' use of a range of material metaphors, this thesis extends the notion of looping effect (Hacking 2007) in the context of autism. In so doing I allow for an incorporation of the embodied practices of humans in their engagement with nonhumans in 'making up' autistic people. Therein is an incorporation of animate, lively bodies in our

considerations of the enactment of autism and the looping effects therein. I explore these below in conversation with literatures from the anthropology of embodiment.

Kin(aesth)etic Melodies: Lively Bodies-in-Time and Therapeutic Rhythms

Rather than framing the body as distinct from the world Thomas Csordas (2002) draws on the phenomenology of Maurice Merleau-Ponty for whom the body is of the world. A phenomenological approach to exploring equine therapy allowed the starting point of the research to be the social and cultural situatedness of autistic people rather than assumed isolation and individuation. This thesis will show that autism is looping to become a highly embodied, sensorialised condition. This is a shift that I argue is reflective of broader societal preoccupations with tensions between the dualism and holism of psyche and soma. Of note, it was not only non-autistic parents and practitioners who utilised these understandings. As explored above, the senses have been used as modes of expressing autistic experience more broadly by autistic publics for some time and were used by my autistic interlocutors.

In the context of my field sites autism was understood to be produced by an interplay of the endocrine, peripheral and central nervous systems of the body and the vital forces of "energy" and "intent", all enmeshed within the built and social environment. The bounded, individual 'body proper' therefore fails to offer a comprehensive account of my interlocutors' understandings of the phenomenon in focus. Indeed, as Haraway asks in *The Cyborg Manifesto* "why should the body end at the skin?" (1991 22). To make the body a topic for anthropological and sociological inquiry today is to ask how it is *lived;* how is it constructed, imagined and subjectively known (Lock and Farquhar 2007).

Ultimately the anthropology of the body, or more specifically of embodiment, asks that we accept the body as a site, not merely of nature and biology, but also of culture and as one open to anthropological and sociological analysis. This is an approach that counters the notion that our bodily flesh objectively exists as separate from our cultural representations of it. The anthropology of embodiment explores *lively* carnalities "suffused with words, images, senses, desires and powers" (Lock and Farquhar 2007, 15). This thesis aims to contribute to this discussion and imbue this lively carnality with a sense of rhythm. Indeed, this thesis explores perceptions around the reorientation of the body in becoming accustomed to the practices of AM. This is a process whereby overall; kinetic movements are pressured by practitioners into (loosely) becoming kinetic melodies. In this thesis I will show how these melodies are believed to come into being via a range of corporeal parts and proportions being brought into harmonious wholes within spaces and temporalities of synchronisation.

Learning new skills or habits, "expresses the power we have in dilating our being in the world" (Merleau-Ponty 2012 cf Moya 2014, 3). Ecks and Kupfer (2015) suggest that in certain contexts 'ethnography' occludes the assemblage of people, movements and networks that anthropological research, such as that proposed here, engages with. The authors argue that a phenomenologically informed 'habitography' provides a space in which practices can be foregrounded. This approach also goes some way to surpass the focus on symmetry and flat ontology of Latourian ANT (Stengers 2011, Latimer 2013) that elides the historical context of autism, equine therapy and the sensory experiences noted above. Gallagher and Zahavi (2008) draw on Leder who states that "a skill is finally and fully learned when something that once was extrinsic… now comes to pervade my own corporeality, my arms know how to swim, my mouth can at last speak the language" (Leder, 1990 cf Moya 2014, 3). This is how kinetic melody becomes – through time - what one might call a kinaesthetic melody, a bodily awareness of moving in and out of social time and synchrony with others.

One of the most salient features of the term 'habitography' I note above is that is temporal; habits form over time, they are repeated. The difficulty for terms such as association and praxiography (Mol 2002) to account for temporality make them less able to comprehend the data at hand. I explore the inhabitable worlds of autistic people whereby "worlding" exists in "emergent socialities entangled in dynamic imaginaries of pasts, futures and presents" (Zhan 2009, 6). These inhabitable worlds allow for bodies and senses to be volatile and in flux yet within a context that acknowledges temporality. These reorientations are explored in this thesis, simultaneously linking 1) temporally extended embodiments of horses and humans 2) and the 'making up' of autistic people via looping effects.

In *Being and Time* ([1927] 1966) Heidegger explores the temporality of *dasein* - 'being-there' or loosely, 'existence' - through time as a category of lived experience. He notes three phenomenologically interlinked dimensions of temporality: the thrownness of beings into the world (past), falling/discourse (present) and projection (future). For Heidegger past, present and future are interlinked and simultaneous (Wheeler 2011). Whilst of significant import to simultaneities of time explored here, Heidegger's definition of *dasein* as something exceptional to humans and animals as poor-in-the-world (Elden 2006, Tanzer 2016) is at odds with my interlocutors' understandings. As detailed in Chapter 3 horses were perceived as embodying the ability to delicately sense the needs of clients, and to "tune in" not only to the atmosphere of sessions, but also the bodily processes of clients. Further, bodily animations of the person in engagement with other living beings central to the force of this thesis are not encapsulated due to

Heidegger's focus on engagement with inanimate objects (Peters 2019, Gallagher and Jacobson 2012).

Perceptions of time have been of interest to anthropology throughout the history of the discipline. E P Thompson (1967) explores the emergence of capitalistic clock time, asking how this new sense of time affected ones "inward notation" of time for working people (57). Thompson refers to Evans-Pritchard in the case of the Nuer for whom "[t]he daily time piece is the cattle clock, the round of pastoral tasks, and the time of day and the passage of time through a day are to a Nuer primarily the succession of these tasks and their relation to one another" (57). Thompson explores 'task time' – as differentiated from clock time – through its punctuation by the rhythms of 'natural' forces such as the tides of the sea or, the ripening of crops at harvest. Rhythm has been explored predominantly through this differentiation of clock and task time in the context of industrialised labour working practices.

Pierre Bourdieu (1977) for example has explored the role of *tempo* in the work rhythms of Algerian Kabyle herders in linking practice, habitus and structure. I seek to extend anthropological explorations of rhythm beyond economic anthropology and explore attempts to bring people on and off the spectrum into the rhythms of a shared social time. As detailed above I argue that three *therapeutic rhythms* interlinked simultaneities of past, future and present and formed a binding force through which multiple layers of therapeutic efficacy were incorporated by my interlocutors. Whilst there is renewed interest in time as a category of experience in the social sciences, rhythm is an underexplored area of anthropological research outside ethnographies of work practices delineated above (see Bear 2014, Bourdieu 1977, Dobler 2016, Herzfield 2009, You 1994).

Limited ethnographic literature on rhythm within dance anthropology explores rhythm as an entity of identity formation in globalizing contexts (Lüdtke 2012). Others explore the ideological work done by the classicisation and nationalisation of ethnic forms of dance (Ness 1997, Reed 2002). Ness usefully notes the metaphorical potential of the objectifying of dancers' bodies in Philippine ballet. Of interest here, she shows that these processes of bodily object making are always imperfect, and inherently unstable due to their being inscribed upon living flesh and blood. This is also true in the context of the instability of autism as any kind of unitary condition. The bodies engaged with one another in the practices of equine therapy are at once living, moving, embodied metaphors of the hierarchies existing between humans and animals, and indeed those humans animalised by reductive frameworks used to define what 'the human' is.

Yet the framing ensembles upon which these troubling metaphors exist were deeply inappropriate and unstable in the worldviews of my interlocutors. Hence their continual reworking to enact relations of trust and equality explored in Chapters 1, 2 and 4 of this thesis. In physically juxtaposing the child to the wild horse, and indeed facilitating their mastery over the animal, these embodied metaphors held the potential to encourage a new perception of the clients as 'becoming [more] human'. The embodied metaphor of autistic clients (and children in particular) riding horses envelopes a range of partial approximations, facsimiles between wild and domesticated, human and animal.

(New) Materiality, Encountering Somatic Mutability and its Limits

Feminist scholars across the social sciences have contributed to materialist understandings of the lived body in exploring the mingling of soma and society (see Haraway 1990, 2003, 2008, 2016, Alaimo and Hekman 2008; Coole and Frost 2010, Puig de la Bellacasa 2011, Sanabria 2016, Pitts-Taylor 2016). Indeed, this thesis takes the materiality of the senses and the 'mutuality' between social relations and the material world seriously. This approach is differentiated from notions that culture is either inscribed upon the body or that a universal body is simply translated into local understandings. Much of this intellectual work is done via the agential realism of philosopher and physicist, Karen Barad (2007). This is most notably in the burgeoning field of what is at times termed 'new materialism' although "the new is best understood to signal not a wholly novel movement for feminism or social theory" (Pitts-Taylor 2016, 5).

Some of this work can tend towards assuming a truth value in current theories of epigenetics and neural plasticity that promote a significant degree of fluidity and plasticity of the body and relatedly the 'intra-action' of sex and gender (and race and class). For Pitts-Taylor for example, more recent feminist approaches to materialism offer "a fresh vision of the physical and biological world, engendered through engagement with contemporary scientific fields such as quantum physics, epigenetics and neuroscience" (2016, 5). On-going interplay of the social and 'hard' sciences in the production of health knowledges is irrefutable and an active engagement with the biomedical sciences is important (Fitzgerald and Callard 2014). However, Pitts-Taylor's approach operationalises theories of neuroplasticity eliding the taken-for-grantedness (Butler 1993, Martin 1994) in these epigenetic and neuroscientific conceptualisations of the fluidity and flexibility of the body. It cannot be ignored that these notions also hold the potential to - albeit unintentionally - reduce, biologise and (re)produce inequalities of sex, class and race.

Whilst animation and movement are central themes for the thesis I therefore depart from some feminist materialisms that rely on an uninterrogated and pervasive flexibility of the soma. This

will be explored in more detail in Chapter 6. Put simply, epigenetics and neural plasticity (and quantum physics) are scientific constructs that can be just as contingent and reductive as biological theories of sex. As Judith Butler detailed in her *Bodies That Matter: On the Discursive Limits of Sex,*

> the options for theory are not exhausted by *presuming* materiality, on the one hand, and *negating* materiality, on the other […] To call a presupposition into question is not to do away with it; rather, it is to free it from its metaphysical lodgings in order to understand what political interests were secured in and by that metaphysical placing, and thereby to permit the term to occupy and to serve very different political aims. (1993, 30)

The title of this thesis *Rhythms That Matter*, is a play on Butler's own title and intimates the theoretical productivity of neither wholly assuming nor negating materiality, or biomedical framings of matter in the context at hand. As Butler notes:

> to problematise the matter of bodies may entail an initial loss of epistemological certainty, but a loss of certainty is not the same as political nihilism. On the contrary, such a loss may well indicate a significant and promising shift in political thinking. This unsettling of 'matter' can be understood as initiating new possibilities, new ways for bodies to matter. (ibid.)

Indeed Chapters 5 and 6 in particular explore how biomedical constructs of the limbic, endocrine and neural systems come to hold much symbolic power along with their delineation as modes of material changes in the bodies of clients as a result of the practices of equine therapy. As I will show, they constitute what I have termed 'symbolic matterings'. By unpacking these notions, we learn much about autism and how it is enacted by the practices of equine therapy.

In their explorations of materiality as 'situated biologies' Niewöhner and Lock (2018) remind anthropologists to continue to systematically question the taken-for-grantedness of assumptions embedded in biomedical knowledges and practices. These are rational knowledges always situated in a "view from a body, always a complex, contradictory, structuring and structured body" (Haraway 1988, 589). These relational contexts produce biologies constituted through the "the joining of partial views and halting voices into a collective subject position that promises a vision of the means of ongoing finite embodiment, of living within limits and contradictions" (1988, 590). It is this situated view from somewhere, and one informed by and perceived of as productive of the materiality of the autistic body and its responses to the practice of equine therapy that this thesis delineates for the reader.

Indeed, this thesis is situated within a rich and expanding literature on care (Pols 2005, Mol 2002, 2008, 2010, Street 2016, Puig de la Bellacasa 2017) which weaves itself throughout the thesis. As Mol (2008) notes "the logic of choice tries to separate facts from values while the logic of care attends to them jointly" (2008, 46). This joint attendance to both facts and values holds some space for a "wondering ambivalence" (Mackenzie and Roberts 2017, 137) regarding the material

effects of equine therapy on autistic bodies, and the layers of bodily resonances and flows thought to be set in train by the practice. That is, an approach that does not make definitive assumptions regarding the existence, or lack thereof, of these effects. In my view, all social interactions and behaviours have material effects.

What these 'really' are exist outside of the aspirations and indeed point of this thesis. That is, I seek to explore how my interlocutors defined therapeutic efficacy, and how they believed that efficacy was achieved via perceived modulations of matter within the situated context of autistic clients' bodies. This notion of situated rather than local biologies (Niewöhner and Lock 2018) usefully offers an account of the travelling and modification of biologies within new environments of values and practices that this thesis seeks to detail. It does so through following the practice of AM as it settles in the UK context, and thus makes up (Hacking 2007) autistic people both materially and semiotically. I frame my interlocutors' descriptions of these minute 'internal' bodily processes as a physiological niche which are detailed in Chapters 5 and 6. This is the third of three such niches enacting a particularly sensorially mediated kind of autism at my field sites.

Methodology

'Multi-*practice* ethnography'

Embodiment served as the paradigm for developing this methodology. This was chosen in response to: reports regarding sensory idiosyncrasies; a lack of ethnographic literature on autistic lived experience; the embodied processes of learning to work with and ride horses; and a requirement to explore the reorientations TRAD and AM methods aimed to inculcate in clients. These mutual bodily orientations of riders, volunteers and ET practitioners formed a mode of communication with horses and were dispositions I shared as an experienced equestrienne. This non-verbal communication proved fundamental to data collection with other equestrians, horses, and people with limited or no verbal language skills. My interlocutors[10] consisted of children and adults with autism, their parents, carers and teachers, and ET, practitioners and therapeutic horses. In so doing it acknowledges the situated character of relatedness.

Developed specifically for autism, AM and its divergences from TRAD held particular possibilities for informing understandings of how equine therapy enacted autism. The relationship between practitioner, client and horse therefore took centre stage as the research progressed[11]. I

[10] The term 'interlocutors' perhaps appears not to account for the highly embodied interactions I took part in with people I got to know, particularly for those who were non-verbal. However, if we consider 'speaking' and 'listening' to include bodily and gestural utterances then the term fits.
[11] Most often parents were present during sessions and most of my practitioner interlocutors were also autism parents.

traced the translations of AM in a number of UK sites and followed it back to its source in the USA. Multi-sited ethnographies (Marcus 1999) have followed people, objects, multispecies entanglements (Latour 1987, Kirksey and Helmreich 2010, Tsing 2009, 2015) and ideas (Mol 2014) and explored their consistency and flow or lack thereof as they are translated in new contexts.

This project explored how *practices themselves* in particular travelled between the USA and UK. This multi-*practice* approach allowed the project to explore how AM was taken up in the UK and the ways in which it was translated and became bound up in shifting local enactments of autism in the equine therapy context. As explored above, these translations were being made via differentiation from the history, regulation, and therapeutic focus of TRAD. In mapping how changes in disposition were inculcated via the embodied engagements of clients, practitioners and horses, it also served to contribute temporal considerations to what have been until recently predominantly cartographic, geographical and thus spatial metaphors of movement in following methodologies.

Methods

Participant observation, that is deep 'hanging out' and spending time with people and learning about their way of life and worldly inhabitations, was used as a method for gathering data. An existing attunement in the equestrian world meant that I became an 'observant participant' (Moeran 2007) immersing myself in daily life at two equine therapy centres in the UK.

Locations and Sampling

A region of England with three AM certified centres became home for a period of 16 months. I received permission to attend Epona, which offered both AM and TRAD sessions and from September 2015 to January 2016 attended the centre for up to five days per week. I snowballed out from Epona to my second field site, Pegasus, via suggestions from my interlocutors. On a cold evening in early November 2015 whilst mucking out stables at Epona I was introduced to Thomas, an autistic advocate and budding horse trainer in his early 20s. Thomas was a self-styled autistic horse whisperer who I would get to know well. Thomas was at Epona *en route* to the AGM of the local branch of the National Autistic Society (NAS) and invited me along. I travelled straight from the stables and - dressed in my yard clothes and smelling rather pungent - I met Paul; local autism dad, officer for the local NAS branch, and trustee of Pegasus. This centre also offered AM style sessions after Paul had completed his training alongside Epona's AM practitioner Chrissie, in 2012. Suffice to note, I used judgement to identify this sample of expert interlocutors at each of my field sites.

Therapy Session Participations and Informal Interviews

Over 16 months at Epona, I took part in up to ten sessions per week with 19 clients with autism ranging from three to 44 years old and their parents/carers. This allowed me to not only be immersed in the embodied experience of the therapy but also to ask questions as the sessions progressed. I followed a number of clients over significant periods of time, and some from their very first session. In so doing I got a sense of the rhythm of sessions, their aims, and how shared attunements between horses, practitioners and clients with autism – alongside parents, carers, and teachers – were perceived to develop. For the first three months from September to mid-December, this included both AM sessions with younger clients up to the age of nine, and TRAD sessions with teenage and adult clients. After this 3-month period, data collection shifted to focus on AM sessions at Epona and Pegasus. At Pegasus, I took part in up to two sessions per week reflecting both the smaller scale of the organisation which held far fewer sessions per week, and their longer duration.

Each person has her or his own language system consisting of a range of words, gestures, sounds and/or bodily movements. My on-going communications with my interlocutors with autism were led by the person, who taught me how best to communicate through spending time together during sessions, working with the horses or spending time together outside of the centres. For example, with Thomas, we used Facebook's IM service regularly to catch up and arrange our meetings. He would let me know whenever my communications were not 'autism friendly'; when I was being too vague or unhelpfully mixing metaphors. With non-verbal children, I spent time getting to know their sounds and movements during sessions, guided by their communications and their parents, teachers, carers or the practitioner.

I did not try to formally interview non-verbal children and instead used my knowledge of each person's way of communicating to feel, sympathetically, for their experience of the sessions. Whilst this might sound rather vague, in my experience, it was very clear. Huge smiles, gurgles, happy noises, expressive and relaxed bodily movements, smooth interactions, synchrony with those around them clearly indicated when they were enjoying being there, engaged in the session, their interactions with the horse and practitioner, and the excitement of moving through the woods on horseback. When they were not enjoying the sessions or gaining anything from them I saw the children for example, doubling over in the saddle, tensing their body, making sharp noises and cries, looking around them, wanting to dismount. On-going informal interactions and conversations with my interlocutors who used language happened throughout my time at the centres; before and after sessions, whilst helping with the horses, or when hanging out at the yard.

Semi-Structured Interviews

Once relationships with key interlocutors were well established and trust and rapport had been developed I carried out 34 semi-structured interviews with autistic people their parents, teachers or carers and practitioners. These semi-structured interviews could be held collectively with both parent and client, or with the client (if over 16 and willing) and parent on separate occasions, depending on their wishes. As I got to know them, repeated semi-structured interviews were also held with practitioners at Epona; Chrissie, Kim, Lottie, Karen, Joanna, Pam, Daniel and the centre manager Saffy, and practitioners at Pegasus; Paul, Georgette, Hannah, Melody and Darcy.

Stable-Yard Work

From September 2015 until the end of January 2016 as well as taking part in sessions at Epona I helped out for significant periods on the stable yard. This allowed me to get to know the working students from the local college who had additional needs, including some individuals with autism. During this period, I also developed a strong relationship with Verity, a woman in her early twenties who had graduated from working student to head groom. Verity was in the process of seeking a diagnosis of autism spectrum disorder as I got to know her, which she received in the summer of 2016. This few months spent helping on the yard also allowed me to get to know the horses well and the extensive practices involved in their care. As will be explored, this gave me access to the complex enmeshment of care practices for both clients and horses.

As noted, there were two methods of equine therapy being practiced at my field sites, with each being based on a different form of horsemanship that understood, trained, moved with, and talked about the horse in different ways. I learned about these methods from both horses and humans. I built horse histories constituting of; breeding, training and arrival stories and asked the yard manager to complete an 'equine personality test' for each horse. They had been chosen for their mix of a range of attributes conducive to the type of sessions they provided including: size, weight bearing capacity, temperament, and movement (action) style. The horses were either donated or loaned to the centre, and most were rescue horses who I was told "wouldn't be anywhere if they weren't here". In so doing I also met the team of professionals who cared for the horses in addition to the staff team, including veterinary surgeons, equine behaviourist, masseuse and shiatsu, 'barefoot' farrier, and dentist.

I rounded off my UK data collection at Epona and Pegasus in December 2016 and followed the AM method back to its origins in the USA by travelling to stay with the founders at the AM ranch for a ten-day period. I carried out go-along interviews during three, two-hour sessions at the Atalanta Ranch, took part in five day-long training sessions in Atalanta Method 1,2 and 3, and Kinetic Kids 1 and 2, led by AM practitioners there: Amy, her partner Abe, Coco, Freya, Marianne

and Louis and held semi-structured interviews with the practitioners. The therapy sessions, informal and semi-structured interviews ranged from 10 minutes to three hours in duration. With permission, all therapeutic sessions, semi-structured interviews and the majority of informal interviews were recorded and transcribed.

Across all sites I had a total of 103 interlocutors consisting of; 13 practitioners – seven of whom were based at the Atalanta ranch in the USA, 21 clients with autism, 16 parents and carers, five young autistic people (who worked with the horses but did not take part as clients in equine therapy sessions), twenty volunteers, twenty horses and eight equine professionals. I saw around three quarters of my interlocutors regularly on a weekly or fortnightly basis with 28 people forming a closer circle with whom I spent more significant periods of time each week.

Field notes were taken during the day in between and during sessions and in more depth when returning home each day. These were consulted as themes were felt to emerge from my discussions during sessions and interviews and used to guide future avenues of exploration and related interview questions. A logbook of my daily and weekly activities was kept. When I felt that no new data was emerging from my discussions and that a level of saturation was occurring, and to ensure a breadth of perspectives, I would change approach, seeking out new and different kinds of interlocutors, in different locations.

Ethical Considerations

Level 2 ethical clearance was granted from the ethics committee of the School of Social and Political Sciences at the University of Edinburgh for fieldwork in the UK and USA. The research was designed to ensure the ethical treatment of all of its interlocutors, not only those considered to be vulnerable, highlighting an approach that understands ethical considerations as dynamic and ongoing. All research participants were made aware of their involvement in the study and their right to withdraw at any time. Written informed consent was requested from all gatekeepers, which was initially conferred onto the practitioners working at the centres, parents and service users. Written consent was then requested prior to taking part in semi-structured interviews and for taking part in and photographing therapy sessions. For those unable to offer written or verbal consent it was requested by a range of locally relevant methods, including by engaging with the 'idiolect' of those people without verbal skills. Informed consent for under 16s was requested in written form from parents/carers and verbally from children themselves should they be able.

In the case of young children with no language skills, a verbal request was made that I could join in sessions, giving an age appropriate level of information about the research project, and any responses via bodily movements or sounds acknowledged and honoured with the help of

translation from parents and carers. For those over 16 informed consent was requested via the range of communicative tools used by the person. Should communication to confirm consent not be possible by these methods, it was requested via a parent. If there was any doubt as to consent being granted willingly or in an informed way, involvement in the study was ceased.

After being granted, consent was reconfirmed periodically throughout the research period. All interlocutors and the therapy centres involved have been be anonymised with pseudonyms used and locations obscured. In a certified effort to notify my interlocutors of what their involvement entailed, interlocutors were made aware of the potential places that the research may be published and, to the best of my knowledge, how the research may be used in the future.

Stepping in and Stepping Out

The ethical considerations of an ethnographer as she engages with people - be they 'vulnerable' or not - and builds meaningful relationships with them is a complex aspect central to the ethnographic method. Ethnographers inhabit the lives of their interlocutors, hoping to gain untold insights. I spent significant periods of time with the people I got to know each week, over a period of 16 months. With clients, I would spend sessions observing and taking part in the interactions between the quartet of client, horse, practitioner and parent or carer. Oftentimes, the practitioner would be working to relax the parent through providing an understanding, unjudgmental, listening ear whilst simultaneously focusing on the movements, needs and wishes of both the child riding in the saddle with them and the horse underneath. The fine lines walked by my practitioner interlocutors in balancing the requirements of all of the people involved in each session reflects an ethical concern with whose needs became a priority. Practitioners had to ask, 'how best to respond?'; something calibrated variously during each session. The shifting iterative inhabitations of engagement and reflection required of the practitioner reflected my own role as an ethnographer. As I gathered and analysed the data I had to 'step in' and 'step out' of moments of engagement with each person or being.

Whilst throughout the thesis I focus most closely on the triad of horse, client and practitioner it is important to note my own substantial presence in therapeutic sessions. Such a long period in the field offered the opportunity for variegated experiences with different numbers of people and kinds of informant. Some sessions would be a group of six; horse, client, practitioner, parent, volunteer leader, and myself. Others of four; horse, client, practitioner, and myself. Despite having an equestrian training and some experience of equine therapy, at first, I was a clumsy addition, asking awkward questions and not yet embodying 'the Epona way' of synchronizing with those involved in sessions. However, as the weeks and months went on, and as I got to know the practitioners, horses and the AM method better I became more adept at assisting with the

sessions. For those clients with whom I had shared all sessions and made a particular connection with, I formed a clear part of the therapeutic unit. I cannot say how these sessions would have been enacted in my absence.

As Kath Weston has recently noted sympathy has a long history in anthropology "both as a descriptor for certain ways of relating to the world, and as a moral passion that characterises something important about the relationship between ethnographers and those they study" (2018, 15). That is, in my interpretation, ethnographers attempt to inculcate relations of 'fellow feeling' through getting to know their interlocutors, but also utilise and rely upon the skills of concealment required for 'stepping out' and theorizing from their stories and lives. The ethical considerations bound up in my proximity to and involvement in my interlocutors' lives were complex and required continual acknowledgement and engagement through field note taking and personal reflection. We must acknowledge that as researchers we are irrevocably enmeshed with the data we produce. Reflexive processes and awareness of the data's contingency were used throughout the collection and analysis process to achieve a level of robust methodological practice. In my case, a reflexively informed balance had to be found between, on the one hand, my practitioner interlocutors' claims regarding the benefits of the therapy, and on the other an enduring critical awareness of the normative force of the intervention. Indeed, in acknowledgement of these processes of dis/engagement this thesis specifically details these inconsistencies, tensions and ambiguities in fine grained ethnographic detail.

Analysis

Data was analysed iteratively, a continual going back and forth between the data and emerging themes throughout the data collection and writing up processes. As noted above, throughout my field work period, emerging themes from prior interviews and discussions were used to guide future questions and avenues for exploring with my interlocutors. Ethnographic methods rely on balancing going with the flow and remaining very open to interlocutors' directions, whilst keeping an eye on the research questions at hand. As with all research, what one sets out to do and the questions one requires to answer do not remain unchanged. Rather they do and should respond to and be guided by the people one meets and uncontrollable forces at play during the time one is in the field. In the writing up process, field notes and a field diary were used to ensure reflexivity.

The Chapters

In Chapter 1, I explore the AM philosophy of "the right physical environment" understood to soothe the sensory issues believed to be central to the lived experience of the condition. This

dovetailed with the 'natural' environment also required by therapeutic horses to ensure their own health and well-being and ultimately their ability to perform as therapeutic animals. Chapter 2 shows that in concert with this making 'natural' of autistic people, autism was defined as a sensorially mediated condition and that therapeutic efficacy lay in working with sensory idiosyncrasies experienced by autistic people. Horseback movement through 'nature' and the application of bodily "deep pressure" were believed to offer sensorial calming through mimicking "stimming" – autistic self-soothing, regulatory practices used for a variety of purposes such as to calm anxiety, or simply for pleasure.

Practitioners believed that if carried out sensitively their "sensory work" practices could provide positive "sensory inputs", avoid "sensory overload" and inculcate spaces of "sensory integration". I go on to argue that for the people that I got to know the situated senses acted as a threshold of rather than a demarcation between the 'inside' and 'outside' of a deeply enacted, enmeshed body-in-action. Whilst all humans were considered sensitive to their environs, interlocutors both on and off the spectrum expressed that horses and autistic people shared a particularly heightened sensitivity to specific – and mostly 'unnatural' – aspects of the environment.

Taking Chapters 1 and 2 together, we see that through inculcating calm sensorial states through horseback movement practitioners believed they could effect a level of "sensory integration" in clients that I term stillness in motion. This indicated the first of a range of indeterminate interplays used by my interlocutors to explain therapeutic efficacy. Chapters 1 and 2 indicate what I argue is an environmental niche that facilitated the enactment of therapeutic efficacy as perceived by my interlocutors, and through which a deeply sensorialised understanding of autism could emerge.

Chapter 3 explores the practice of "finding the right pressure" and intuiting the threshold between "sensory input" and "sensory overload". It shows that that through finding the above and a harmony between the agencies of the triad of client, practitioner and horse a state of "sensory integration" could be coproduced. I suggest that in order to manage this integrated state a second indeterminate relation expressed by the notions of "pressure" and release was invoked. This chapter signals a shift in the thesis from spatial to spatiotemporal metaphors and introduces the therapeutic rhythms that I argue held practitioners' models of therapeutic efficacy together. Chapter 3 extends the temporal frame of my conceptualization from the immediacy of states of stillness in motion detailed in Chapter 2. It details a second layer of therapeutic rhythm; the weekly repetition of equine therapy sessions across significant periods of time.

Chapter 4 continues with this behavioural application of "pressure" and its release before delving 'in' to 'internal' bodily processes in proceeding chapters. Chapter 4 details the AM practice of "following the child" and Verity and Thomas's experiences of learning how to train horses,

particularly the practice of "free schooling". This allows a consideration of unexpected metaphenomena whereby the young autistic adults I got to know reported developing better ability in reading the body language of others and through learning to make the horse respond to their commands and learned how to impose their own "intent" on others. Taken together Chapters 3 and 4 show the collective enactment of a behavioural niche by horses and people on and off the spectrum.

Chapter 5 explores the local notion of "limbic resonance", an operationalization of biomedical theories of the limbic system and "the stress response" in finding bodily homeostatic "balance". Through describing the juxtaposition of: homeostasis with flux; and "hard-wired", "sequential" and atemporal "parallel" processing, this chapter details another of the indeterminate interplays and uncertainties expressed by my interlocutors. By unpacking this phrase, I show that my practitioner, parent and verbal autistic interlocutors all understood autism as a condition enacted by an "overactive limbic system" and "flightiness". These were properties assumed to be shared by horses and autistic people and to facilitate a transspecies entrainment via energetic and affective transmissions. I show how bodies were thus perceived as permeable to the biological and magnetic flows and pressures of other bodies, and again, intrinsically enmeshed in their environs.

Chapter 6 explores the hormonal flows believed to be modulated by AM practices. This micro-level of efficacy promoted by practitioners suggests an understanding that the hormones "cortisol" and oxytocin in particular shared a direct, causative relationship with one another and were out of balanced proportion and harmony in autistic people. Equine therapy was understood to redress this imbalance and facilitate learning through continual repetition which was understood to materially alter the brain. As such, this chapter explores another of the indeterminate relations encountered and grappled with by my interlocutors and detailed thus far; between (a level of) fixity via hormonal "balance" and stability, and the hormonal flows bound up in perceptions of clients' neurological and behavioural malleability.

I argue that a third therapeutic rhythm was enacted through expectations of clients' mutability in the future and that this perceived mutability – by being inculcated through producing states of sensorial calm - constituted a mutability in stillness. The chapter asks what is at stake in these allusions to malleability and explores the limits of "neuroplasticity" as a theoretical frame for new materialism and social theory. In its return to the substance of oxytocin introduced in Chapter 1, this chapter brings the focus of the thesis full circle. I argue that oxytocin acts as a transtemporal substance extending across the three temporal registers of the therapeutic rhythms detailed. In so doing it links the inversions of stillness in motion, and mutability in stillness detailed by this thesis.

In Chapters 5 and 6 I show that my interlocutors' understandings of autism and therapeutic

efficacy were extended through and then beyond their enactment by the environment and sensory experience to what were perceived as deeply interrelated biological processes of the body. In so doing, they continue to enrich the notion of the niche, to incorporate these deeply physiological aspects through which autism was enacted and looping. These focus on practitioners' and some parents' understanding that, through what I refer to as the therapeutic rhythms of AM, material changes could be affected in the bodies of autistic people and that in turn enacted sociality. For the people I got to know therefore, in both senses of the word: these were rhythms that mattered.

CHAPTER 1 - "There's Nature and 'Nature', Is There Not?": Partial Approximations of "The Right Environment".

It was a Sunday morning in early September and my fifth visit to Epona, the largest of my three field sites. I rose at 6.30 and made the seven-mile drive there from the sleepy three house hamlet where I now lived, through Sandford - the largest town in the area and home to over 120,000 residents. I rolled up the long gravel drive in my car towards the array of farm buildings that formed the centre. These sat to the rear of a generous farmhouse and a pair of red brick workers cottages. The air was warming as the day emerged from its autumnal pinch. From the driver's window I could see a low mist was yet to burn off. It hung in the short stubble of the wheat fields that stretched the length of the drive from the busy road end to the quiescent centre. I arrived into the farm courtyard, edged by a range of low-slung stone sheds, taller hay and grain stores, and a larger barn once used as a milking shed. Made of breeze blocks and corrugated iron, the shed looked a more recent addition to the farm and now housed Epona's stables, feed room, tack room, office, toilets, and kitchen.

From the courtyard one could see down a slight slope to the large, sand indoor and outdoor riding arenas, woodland trail, complimentary therapies hut and 15 acres of fields for the horses. From here one also had the view across a few miles of arable land to a range of small rolling hills beyond. Epona offered sessions for 160 people with a range of conditions each week, via a tightly packed schedule of sessions run by six staff with 16 horses. The horses came in all shapes and sizes. They ranged from Blondie, a tiny golden palomino Shetland pony whose shoulders stood at only eight 'hands' high[12] to Arthur, a big, grey[13], thick set Highland at 16 hands, and on to the big old black mare[14] Tara, the tallest of the herd at 18 hands high[15]. Starting at 9am and some days ending at 7pm, the centre offered up to 12 sessions of therapeutic riding per day. Although classes at Epona had resumed after the summer break, it was Sunday: the horses' and volunteers' day off. I was there to shadow Lottie and learn the ropes of the yard. She was the yard manager and in charge of the care of the horses and the staff at Epona. I got out of the car and entered through one of the two large openings at each end of the barn looking for her.

The horses were sleepily dozing in the stables and the centre was peaceful and calm. Lottie was a statuesque, youthful woman in her early forties with dyed red hair cropped tight into her head, giving her a youthful, elfin air. We sat down on the bench at the front of the barn with a cup of

[12] A 'hand' is a measurement of 4 inches. The term derives from the use of the hand, held horizontally, to take a horse's measurement. The measurement give the height of the horse's shoulders, or 'withers'. This made Blondie only 32 inches tall.
[13] 'Grey' refers to any colour between grey and white. Arthur was bright white in colour.
[14] A 'mare' is a female horse.
[15] Tara was 72 inches (6 feet) tall at the withers, the tip of her head standing at around 8 feet high.

tea. Saffy, the centre manager joined us and suggested it would be informative for me to assist the group of young college students on and off the spectrum in their day to day work on the stable yards as well as taking part in therapeutic sessions. This not only gave the organisation some much needed assistance, but meant I spent significantly more time helping with the horses than initially planned. Saffy discussed the ways that she and the others were trying to allow the horses to live as freely as possible, in as 'natural' an environment as possible. She shared her concerns that the centre's acreage was too small for the herd to move around, or to allow them to, as she put it, "walk up to twenty miles in a day as they would in the wild". With our tea and conversations finished, Lottie and I set to work on the yard and I watched with more focused attention than I might have done prior to our conversation with Saffy.

The yards were dry and swept free of shavings and silt. Lottie, her head groom Verity, and the team of volunteers must have gone to great lengths to keep it this clean of mud and dung. We walked up the yards towards the feed room, past the double row of tidy stables facing one another with clean white fluffy beds made of recycled paper shavings. "This used to be a dairy farm before the farmer retired and we moved in" she told me, "that's why the stables are so small, they were milking pens". We walked up and down the "yards" - two adjacent concrete walkways running between two rows of now repurposed milking pens. Brightly coloured head collars adorned with small, carefully handwritten name-tags, matching a personalised plaque, hung beside each stable door. Lottie collected a stack of remarkably clean pink, purple and blue buckets. These were also carefully name-tagged. The stack had been prepped with the morning's feed the previous evening and Lottie began to place them out in rows on the ground.

She pointed to a shelf behind her where a long row of different sized tubs and jars sat alongside another large whiteboard. On the board was a grid, with the list of horses' names down the short side and names of products across the long side. "This tells you who gets what supplements. And, if the feeds haven't been made up the night before, the quantities are all here too." She began to dispense powders from the myriad tubs: a general mineral supplement for all horses, garlic powder, "Magnitude" for anxious horses with a magnesium deficiency, "Scratch" - dried milk thistle and nettles - for horses with skin complaints and suspected underlying liver toxicity, and lastly linseed oil. With the feeds made we opened the stable doors and set out the buckets in each. Lottie returned to sweep the feed room. To my surprise she used a hand brush and shovel rather than a broom. We then soaked pre-filled hay nets for those horses with respiratory troubles and made sure that the rugs were squarely folded and lain over the stable walls before heading out to bring in the horses.

We walked down the yards and out to the fields. I was expecting Lottie to open the gate and enter the field to place a headcollar on one of the horses. However, she stood still, waiting. She had no

headcollar in her hand, only a rope. After a while, Arthur came to the gate. Lottie opened it and let him through, unadorned. She walked alongside him as he entered the barn, past the other stables and full feed buckets, and into his own stable. She repeated this until all of the horses, who seemed to know where to go, were stabled and eating breakfast. With the horses all now in their stables, Lottie turned my attention to the array of boards adorning the walls of the barn. Due to the additional learning needs of the volunteers and some of the staff at the centre, all necessary information for caring for the horses had been made available in a range of formats. A large blackboard on one wall noted the day's session timetable. This detailed the time duration of the class, clients' names alongside the name of any group they attended with, the horse being used, and the type of session.

The blackboard formed the central focus for information, with a range of whiteboards with other layers of necessary information adorning the other walls of the barn. Once one had read the blackboard detailing the ensemble of client, horse and type of session, the whiteboard on the wall to the left was to be consulted. This detailed the specific pieces of equipment required for each horse as per each type of session, also name-tagged and which were stored inside the tack room; bridles, girths, fluffy sheepskin pads and saddles, and other equipment. More whiteboards detailing turnout and stabling rotas for horses, hay and medication quantities, jobs list and messages from the office, were also placed around the walls. This elaborate array of informative boards was aimed at helping volunteers and avoiding any confusion around who or what went where and when. The board was a continual work in progress, and as I later discovered, one overseen and updated by Verity at each pause in yard activities.

It was not only the team of horses at Epona that were deemed to require an environment that was as 'natural' as possible. So too were autistic clients considered to require such spaces. A few weeks later, I was in the kitchen mixing Cracker's lunchtime feed. Between her teaching load of AM and TRAD sessions and designing the organisation's new website Chrissie - Epona's AM practitioner - had been somewhat elusive until now. She approached me and asked about the research in more detail. We got chatting about her work with clients with autism. She told me:

> We have evolved learning as we move through the world, constantly making decisions, scanning the horizon, hunting, looking around us, walking together with our animals. And now, we are just expected to sit still all day and focus in one form of concentration. We wonder why there are so many behavioural and anxiety problems in schools. Kids are just expected to sit on a chair for hours on end at school. And that position we put them in, folded on a chair, passive, unlike if they were standing, walking, or sitting in a saddle or on a ball, is really difficult physically for them. If you take away the chair, that position is really stressful for the body. They're spending their energy and brain power trying to keep themselves upright in that awkward position. No wonder it's hard for them to concentrate. And we're surprised when we start to see all of these sensory processing and communication disorders happening.

Understanding and relatedly providing for people's specific resource requirements such as a 'natural' environment and continual movement produced spaces in which they could learn and flourish. Providing "the right environment" was understood as central to halting what was called the "negative cycle" that produced autistic symptoms and limited learning. Providing "the right environment" was considered central in allowing people, and particularly autistic people, to flourish. Mainstream school environments for example were viewed by all of the people I got to know as limiting, ill-designed for educating children, and productive of wider behavioural issues.

This chapter establishes this thesis' exploration of how autism was enacted by the practice of AM in the context of my field sites. It does so by detailing what my interlocutors promoted as "the right environment" for ameliorating the symptoms of autism. I detail conversations held during three training sessions in AM at the Atalanta ranch in a Southern state in the USA, in December 2016 in which 'naturalness' was promoted as key to "the right environment". I suggest that autistic people were constructed as more 'natural' than other people and perceived to require environments with enhanced 'naturalness' to function as social, communicative and teachable beings.

Practitioners of this method at Epona also worked hard to provide "the right environment" for their team of therapeutic horses. As intimated by the introductory ethnographic vignettes above and expanded upon below these standards and related care practices were designed to ensure clients' and horses' health and well-being specifically by providing as 'natural' an environment as possible. Yet they simultaneously required extraordinary levels of intervention and regimes of domestication. An ever-elusive yet essential wildness of the horse and wilderness in which they 'ought' to live was repeatedly discussed. This vision for allowing a space in which clients and horses could live in "as natural a way as possible" inspired both the ethos and architecture of the centre environments.

In order to fully grasp naturalcultural interactions it is important to move past the binaries of domesticated and wild, natural and unnatural instead exploring human-animal engagements as interfaces within mutual ecologies (Fuentes 2010). These engagements are ones through which, over time, humans and animals coproduce shared and intersecting ecological, behavioural, and physiological niches (Fuentes 2010). In my use of it here, 'niche' has a more nuanced meaning which requires elaboration. I incorporate Ian Hacking's (1998) use of the notion of an ecological niche to refer to those environmental conditions which facilitate the emergence of particular forms of (mental) ill-health as a new form of life or way to be a person. As detailed in the Introduction, autism is no longer considered a form of mental illness. This notion of the niche is

however central to understanding the role of AM practices in enacting the looping of the condition. This chapter will specifically argue that the "the right environment" constituted an environmental niche coproduced by horses and autistic people. This is the first of three niches detailed by the thesis that I argue enacted a particular kind of autistic person.

As I will show, my interlocutors felt that their clients responded well to more 'natural' environments and were relatedly somehow 'wilder' kinds of people. I argue that this notion was constructed through ideas about what constituted "the right environment" for clients. I suggest that these ambiguities were produced by and productive of the physical spaces of the centre and its surrounds. I then go on to map handlers' understanding that the physical spaces of the centre not only limited clients' freedom from bad sensory triggers and restraint but constrained the true nature of the horses. This affected what was perceived to be a transformation of the horses' behaviours. A lack of resources was believed to produce a shift in herd dynamics; from a more 'natural' egalitarian system based on resource need, to an aggressive one which gave what was understood by my interlocutors to be the false impression of a hierarchical and fixed 'pecking order'. This reflects a tension between flowing relations and fixed hierarchies in my interlocutors' practices that simultaneously enacted relations of both wildness and domestication. This is the first of a number of such simultaneous interplays detailed by each chapter of the thesis. To recap for the reader, I argue that the proliferation of these tensions reflects the heterogeneity and uncertainty of autism, and deeply held societal concerns regarding the boundaries of human wildness and domestication.

The aim of this chapter is to provide for the reader an understanding of how 'naturalness' was produced in partial relations between humans, horses and the architectural features of the environment at my field sites. In so doing it details the ways in which this process of production was enacted within the physical environments in which therapeutic horses and humans on and off the spectrum engaged. More broadly, it details the implication of horses' and humans' 'naturalness' bound up in the making of "the right environment" for both clients and horses. This prepares the ground for the following chapter which explores the sensory issues believed to be central to autism and used to define what constituted "the right environment". The proceeding section details what constituted "the right environment" as delineated by AM and its practitioners. It is populated by excerpts from three training sessions delivered by Amy and Freya at the Atalanta ranch in December 2016.

"The First Thing We Need to Do […] Is Provide the Right Environment"

As we sat in the day room of the sprawling farmhouse of the Atalanta ranch Amy introduced the aim of "the right environment" to us, which was "to replace the negative cycle with a positive one. To do this we have to reduce the cortisol levels and we do that by creating an autism friendly learning environment". Producing this environment was the first stage of AM.

> The first thing we need to do is [get] the right environment […] To let people understand better we came up with an equation. The right physical environment + the right human environment = learning. We always like to start with the right physical environment.

This section focuses on "the right physical environment" as it was understood by my interlocutors[16]. Two aspects were considered central to the right physical environment; sensory triggers and movement.

As noted in the introduction, autism was understood as a deeply "sensory" condition. Freya explained how focused on their individual clients' sensory profile practitioners needed to be. Without this awareness, the method would be ineffectual.

> Sensory is the first thing we need to be aware of when we design an environment… Everyone has good and bad sensory triggers. Not just autistic kids. Something good for someone could be bad for somebody else. Everyone is different. You need to focus on the kids you are working with. … you need to be aware of what the good and bad sensory triggers are. The good and bad triggers counteract each other.

Despite these individual differences, common "bad sensory triggers" produced by the design of the built environment were easily identified and were multisensorial.

> Every child is different but, in our experience, most kids have common bad sensory triggers. These could be artificial fluorescent lights. And the kids say it's because they can see them flickering. They can see the frequency. They experience this light in the same way we experience strobe lights. Can you imagine being in the classroom but being in the middle of a disco? It is impossible [to learn]. Another [bad trigger] is strong smells. Artificial smells like bleach or alcohol. Especially the products we usually use to clean our classrooms and public environments. Also, really crowded spaces. Most of them say that they cannot discern the voices of the people they are with from other voices in the area. They experience crowded places like when you try to find a radio station, but the radio is not working. They cannot get any conversation because there is too much going on around them.

These triggers were understood to overwhelm the people she worked with and limit their ability not only for learning but for participating in conversations and engaging meaningfully with others. And so, the presence of 'bad sensory triggers', notably manmade, 'unnatural' aspects such as

[16] The human environment, that is, the practices by which practitioners of the method were to engage with their clients most sensitively and effectively is explored in the following chapter on therapeutic practices.

artificial lighting, limited the therapeutic utility of a space. Conveniently, these were relatively rare in the stables environment.

Freya gave us the top three "good sensory triggers" as she and the other Atalanta team saw it. "Just as they can have common bad sensory triggers, they can have common good sensory triggers. The natural environment, being in nature is one. Another one is animals, just having them around, petting them. Another is water". It is important to note here that these most helpful aspects: 'natural' environment, animals, and water were abundant outdoors in 'nature', and by default, the stables or ranch environment. Although these sites were by design more therapeutic for autistic people than traditional learning environments, the people I got to know were continually working to make them more beneficial wherever possible.

Each site had also worked to redesign their space, making 'good' triggers more abundant in order to be more therapeutic for their clients. Atalanta, Pegasus and Epona had created woodland trails, with a form of water course running through it. Atalanta, aware of the echoing, 'unnatural' design of the typical riding arena had built one specifically with no sides. The child would have the benefit of a roof giving shelter from the strong sun and occasional rain shower yet enjoy the image of the woods from all sides of the arena. They had also built a covered play area, provided benches, and large water troughs for the children to play with. These sites were at once considered natural, yet explicitly actively produced. To summarise this section on the sensory aspect of "the right environment"', it is clear that the presence of horses around which these spaces at Atalanta had originally been designed, simultaneously made them therapeutic for autistic people. Once the effect of this design had been established and understood, practitioners built upon the utility of these spaces with carefully designed additions.

"Let Them Move, Move, Move": Movement as Biofeedback Loop

The second central aspect of producing "the right environment" was providing spaces for expansive movement. This enabled the "pinnacle" of moving through nature on horseback, but also to allow children to move on foot. This human need for movement was explained in evolutionary terms, as Chrissie made clear when she told us that "we have evolved learning as we move through the world, constantly making decisions, scanning the horizon, hunting, looking around us, walking together with our animals" as cited in the opening sections of this chapter. In her view difficulties with a sedentary lifestyle and provisions of the current UK education system was an issue for all people. Autism was a condition that Chrissie felt was "to do with movement". This section goes on to show that as my interlocutors understood it, it was the way our bodies engaged with the environment as we moved through it in particular that made movement so

central to the efficacy of AM. Amy founded the method alongside Louis and worked as a practitioner. She was based at the AM ranch in the USA. She told me:

> If you think back to our ancestors, they moved. They were nomadic. They moved 15-20 kilometres a day and their children moved with them. If they were little they were carried, if they were bigger they walked. But they were moving all the time. And they learned on the move. They did not sit the kids down under a tree and say, 'so Freya is going to stay here with you and she is going to teach you guys, and we're all going to go off and we'll come back later and pick you up'. That wouldn't have been safe. Everyone needed to stay together. They needed to move because they needed to find new sources of food and water all the time. So, the kids moved, and they learned while they were moving, and they learnt through watching and through experience […] Our brains evolved to learn through moment. That's why they learn best through movement.

Amy then went on to detail explanations for the importance of movement for learning. These understandings were underscored by a model of the brain as made up of highly interrelated regions that processed in parallel, and inseparable from the environment through which one moved.

They were also underscored by a model of learning as enacted by the creation or strengthening of new connections between interrelated regions. The first of these explanations was the increase of blood flow to the brain produced by movement and deemed necessary for learning. Second was increased production of a substance known as brain-derived neurotrophic factor (BDNF). "You can think of this as *Miracle-Gro* for the brain. It's a protein and our brain needs it to build learning connections. When we move, we produce more of this and therefore our brain is able to learn faster". The third explanation was the interrelation of the vestibular and attentional systems of the brain.

> Our vestibular system [is] mainly responsible for our balance, but it links directly to our attentional system. So, when we move this improves our balance and our attention skills. What this means is that it's not really enough for the child to just take a walk. We need to be getting these kids doing the type of movements that activate their vestibular system because it's that which will be able to increase their attention.

Some kind of integration deficit in the vestibular and proprioceptive senses had been emphasised as part of the sensory processing disorder (SPD) experienced by autistic people (and which will be explored in the next chapter).

This contributed to the perceived need to get children with autism to "move, move, move". It is important to note that autism was constructed by not only the central nervous system (the brain and spinal cord, CNS) but also the peripheral nervous system (PNS) which in this context were considered inextricable from the environment in which they existed. Freya interjected at this point and told us:

> The sensory part is not just feeling, touch. It's also proprioception, the feeling of where your body is in relation to the environment. So, some of the kids walk on tiptoes to feel their body more, or it could just be because they love balancing. It could be the sensation of the surface they are walking on that they don't like. It could be that when you are walking on tiptoes you always have to find your balance. So, it could be related to something sensory that they don't like or something they are looking for.

It was the practitioners' job to work out whether it was; an "avoidance behaviour", or a "sensory seeking" one.

Amy continued to tell us about the last reason for movement's positive effect on the brain. Lastly, and "what makes it most relevant to autism" was movement's activation of the cerebellum. Whilst noting that it had until very recently been conceptualised simply as the "motor control centre of the brain", Amy told us that:

> recent research has shown that the cerebellum connects to the rest of the brain… In particular, that there is a direct link between the cerebellum and the cerebral cortex… [W]hen we move, and the cerebellum is activated, this in turn activates the prefrontal cortex. The prefrontal cortex is also directly activated by movement. It's a double whammy.

Working on an assumption of a level of malleability of the brain, movement was understood to facilitate a strengthening of new pathways and a development of particular brain regions. By providing "the right environment" that could facilitate expansive movement:

> This pathway between the cerebellum and the prefrontal cortex is improved. And the more an area of the brain is activated, the more it develops. And what this shows us is that the more we move, the more the prefrontal cortex develops… [T]his is the area of the brain that is responsible for executive control, for higher cognitive thinking, for emotional regulation, for reasoning, for planning for delayed gratification. For all these things that are really, very delayed in children with autism.

This situated movement was therefore not only central to human learning in general, but specifically for learning for autistic people.

Sensory idiosyncrasies also applied to movement preferences. "Not all kids like the same movement. You need to focus on what they like from a sensory point of view, and from a movement point of view." Freya explained.

> Roll, run, jump? They are looking for movements that they can get the same sensation that they like. Once you know these you can design the environment to suit them. For example, OK 'Billy' likes gravel. But don't stop there. What does he like doing with it? Moving it, throwing it, putting it in one bowl to another one.

In catering for the needs of horses, ranches and stables operated as spaces in which the child with autism was able to inhabit exactly this kind of environment. They were in 'nature', surrounded by animals, water, gravel, dirt and free and safe to move around – all integral aspects of "the right environment". Riding offered the necessary increase to blood flow, release of BDNF, and vestibular activation and related challenge to the balance system which enacted learning and the associated strengthening of interrelations of the cerebellum and prefrontal cortex. Horses were thus active in producing "the right environment" for children and adults with autism as it was understood by the developers of AM and its practitioners.

To summarise this section, exploring what constituted "the right environment" is useful in its illustration of what kind of spaces humans were understood to need to be most comfortable and able to learn. In relation to autism, these spaces, populated by 'good' (and natural) rather than 'bad' (and manmade) sensory triggers, facilitated finding one's sensory balance and relatedly spaces of stillness in which learning could happen. Somewhat counterintuitively, these states of stillness were produced only by being free to move through 'natural' environments, with animals, "like our ancestors did".[17] Autistic people were also constructed as somehow more 'natural' by way of these additional needs for more natural places to inhabit. Should they be afforded these open, "free" spaces, autistic symptoms were perceived to lessen, via modulating corporeal processes of brain and bodily systems.

Providing as 'Natural' a Life as Possible: Approximating "The Right Environment" for Therapeutic Horses

The team had a vision to provide an environment that was as close as possible to a 'natural' setting, not only for their clients, but also for their horses. They worked hard to produce an environment as close to that which a horse would experience 'in the wild', in 'nature'. Based within a 20-acre setting in the heart of a rural county in England, one might think that nature and wilderness wouldn't be hard to find. There were only two larger metropoles, one 5, the other 20 miles away, with the nearest city over 60 miles away. However, the parts of this area of England's countryside that were not densely populated with small villages, were formed by highly managed agricultural land. The team at Epona repeatedly discussed the wildness of horses and to the wilderness in which they believe the horses ought to live. This notion of wilderness was one that many people I got to know referred to as I found out during one session with a young girl Angharad, her mother Vicky, Chrissie and Ally the pony.

[17] This interplay of movement and stillness will be explored in Chapter 2.

Angharad had been taking part in AM sessions at Epona with Chrissie since the age of three. The family had also travelled out to the AM ranch to take part in AM camps, highly intensive weeks working with Louis and his horses. Vicky had tried a breadth of diet restrictions to help her daughter that some other parents had felt were helpful; gluten free, casein free, dairy free, wheat free, but found no effect for Angharad, other than making her upset by not having the foods she was accustomed to. Vicky often talked about their activities over the half term holiday and described a family trip to what she described as a "contrived" local children's "nature park". She had reluctantly taken her family there and regretted it. In comparing it to their normal walk in the woods she told us, "there's nature and 'nature', isn't there?". 'Real' nature, the 'true wilderness' which the practitioners and parents appealed to was not readily evident within this highly populated and agricultural environment.

This elusive 'true' wilderness was always present in the back of my mind as I drove to and from my field sites along glorious sunken holloways. These were ancient 'hollow-ways', small roads that ran between the ubiquitous arable fields. The team at Epona were highly aware of and sensitive to the manufactured format of the local landscape which consisted of miles upon miles of agricultural land carved up for intensive farming, punctuated by quaint and meticulously manicured little hamlets and towns. A lack of wilderness and toxicity of the local land from extensive pesticide use was felt to have a profound impact on both the clients and their therapeutic horses. Chrissie had shared concerns that local farms planting rapeseed for making oil had been producing allergic effects on the children and horses. As will be expanded upon in this chapter, these impacts of the manufactured environment were bodily and behavioural. Further they not only affected clients' well-being and therapeutic outcomes but also the dynamics of the herd of therapeutic horses.

Horses are large, unpredictable animals that at times can be capable of instantaneous and dangerous reactions in response to threats from their surroundings. However, the fluffy sheepskin saddles, colour coded feed buckets and soft white bedding in the stables at the Epona centre created a feeling of comfortable safety, order and predictability around the horses. This high level of domestication served to tame the wild potentiality of the horses and imbue them with a sense of calm and safety. These aspects were integral to the efficacy of the therapeutic encounter, not least to parents' reassurance that their children were safe riding on these animals. Simultaneously however, the horses' charismatic wild nature was integral to their therapeutic efficacy in the ways this afforded certain resonances with the clients with autism. Grappling with this ambivalence between 'natural' and 'wild' and 'domesticated' and 'safe', meant that "the right environment" for these animals could only ever be partially achieved. Saffy and Lottie, the duo with the

responsibility for managing the horses' care, continually discussed how they could improve both clients' and horses' welfare through the centre environment. The description below reflecting on my first discussions with Lottie and Saffy about their vision for the centre and its horses, elucidates these orchestrations.

In mid-October 2015, Lottie and I sat down in the kitchen for a catch up for the first time since I started helping on the yard. Saffy came to join us, excitedly sharing news about the new centre the organisation was planning to build. A 35-acre plot had been secured at the foot of a range of hills 10 miles from the centre just visible through the trees in the woodland trail. She told us about a meeting with The Woodland Trust, a national organisation focused on conserving, and encouraging public engagement in the UK's woodlands. She had been seeking their advice on the planting of a new woodland on the new premises and the best grazing to cultivate there for the horses. As we moved out to sit on the bench on the front yards to catch the sun, the conversation remained on this topic. For Saffy and Lottie, making sure the horses had the best grazing was paramount. "Rather than this sugary stuff that they have. It's so refined". The centre was based in a 20-acre section of what used to be a large dairy farm. The farmer was now mostly retired and had repurposed the rest of the farm to grow straw and hay, rather than raising a dairy herd. The fields on which the horses grazed remained in their original dairy format of six small fields and had for decades been planted and reseeded with rich monoculture grass, to maximise milk production.

The grazing at the centre was one of the reasons the team had been pushing for a move to a new site. Firstly, the space was deemed an inappropriate habitat for the proper care of the herd of horses. Secondly, and echoing parents' concerns with free-from diets for their children, this highly modified grass was "poisonous" to their horses, reflecting what was a pervasive perception of the toxicity of the manmade environment.

> The horses we have, they need to be out eating different grasses, on almost bare fields, mixing it up with different herbs, foraging for things, moving about 20 miles a day. There's just not the right land for them here. Too much sugar, they get grumpy, bloated, gassy. It's like having a diabetic person. They're bound to be grumpy with these peaks in blood sugar.

Grass with high sugar content is a common concern for UK equestrians as it is understood to cause a condition known as laminitis, which can be fatal for the animal**.** The breeds (and cross-breeds) of horses native to the UK that the Epona herd were made up of are perceived to be adapted to living on poorer scrub lands and moors and to survive by foraging over large distances. They were seen as a poor fit with the rich agricultural land that now spread across the county. A common practice to manage the problem is to house horses in starvation paddocks – small, sparse

fields, where little grazing is available. This is understood to fend off laminitis, a disease caused by the dangerous mixture of sugar rich grass and very common in these so-called 'good-doer' horses with slow metabolic speeds.

As many of the herd were native breeds prone to such a disorder, Saffy had been researching the problem and had concluded that using this method of starvation paddocks was not effective. Managing weight gain by confining their movement to small spaces, and doing so within sugar rich fields, did not result in the horses losing weight as desired, but in them storing more fat.

> And the way we have to keep them off the grazing here to keep them from getting laminitis... It just makes it worse apparently. I've been getting some advice from researchers who did a five-year project on zebras. The more you starve them, the more they store. So, they need to be out eating all day, as horses should be, but eating the right stuff. Tougher grasses, herbs. We need grasses from hundreds of years ago, before they were modified. So yeah, we're working with the Woodland Trust to cultivate that kind of environment.

And so, for Saffy the "right stuff" required a return to what she understood to be a more natural biosphere. One existing when she considered the land to be both more plentiful and purer, prior to genetic modification of the grasses she could feed her horses.

It had been a physically gruelling few weeks trying to keep up the standard of care expected for the horses here. The juxtaposition of on the one hand, the 'unmodified' wilderness Saffy aimed to recreate in her vision for the new centre, and on the other the highly domesticated space the barn was enacted to be by the energy intensive practices it housed felt entirely contradictory. The design of this internal space, its concrete stables with fluffy beds, immaculate floors, and shampooed animals produced a feeling of safety and healing. However, this juxtaposition was highly productive. The feeling of safe domestication was not opposite to - but was instead heightened by reference to - a 'real' wilderness 'out there' somewhere beyond the centre.

Providing as natural an environment as possible within the barn was a continual work in progress. The team engaged in a perpetual effort to push back against any unnecessary domestication of their horses. This work required operationalising a productive ambiguity between natural wildness and safe domestication. Further, rather than simply leaving the horses to live as they would "in the wild" in the fields, the practices required to provide such a 'natural' space within the physical parameters of the centre were counterintuitively labour intensive for the team involved. We finished our cups of tea and got up to return to work, stepping back into the cool, dark of the rectangular barn and began to remind ourselves of where we were with the day's tasks.

Approximating Partial and Productive Spaces of Care

Over the next few weeks, Saffy intermittently came to join me on the yard to fill me in on new developments and plans for enriching the horses' experience. I had been checking the hay supply in Arthur's stable, and we were stood at one of the four large openings at the bottom end of the barn. Saffy told me that if the horses must live in this repurposed dairy farm and be stabled during the day and at night rather than being out roaming in the fields "as they were meant to", the team would do all they could to make it "as natural as possible".

> It's really important that we try and enhance their lives when they are here. Because it's an important job, but it's boring job for them. If we can stimulate them in other ways, that's excellent. So, I've ordered loads of carrots for them. We're going to chop them up and put them in their haynets. And they must always have hay in their stables.

This practice was understood to slow down their eating, to ensure they would be chewing all day, as they would if they were out grazing in the fields. Doing so would not only avoid the digestive troubles so common with horses, but keep the horses relaxed and secure in the knowledge that food was in plentiful supply. As Saffy updated me her eyes drifted off and her gaze moved over the sugary grass fields, through the coppice of sweet chestnut trees, to the small range of hills visible to the back of the centre beyond.

This view moved up over areas of decreasingly managed land – from dairy fields on up to moor and hillside. The two large doorways at the end of the barn framed this more vividly 'natural' environment in which Saffy wished her horses, and clients, could live. This not only gave power to Saffy's continual references to an appealing wilderness 'out there', it made the sense of safety and domestication of the fluffy inside more palpable. The horses were understood ultimately as wild animals – and could quickly shift back to being wilder were they allowed to live in their true mode 'out there' in the wild. By entering the barn, and the other spaces of the centre – such as the grooming and treatment stations and riding arenas – they became domesticated and safe enough to help heal vulnerable children. Indeed, they 'became human' enough to facilitate and enable social interaction in children on the autism spectrum as will be explored in later chapters. In this sense then, by alluding visually to the wilderness beyond, the architecture of the space facilitated a continual reminder of the wild potentiality of the horses.

The 'naturalness' of this space was pervasive and productive yet continually in flux. The horses' inherently wild nature, so readily appealed to and actively sought, was also domesticated by the soft, fluffy, immaculate interior décor of the barn and the therapeutic and training practices therein. The large doorways at the end of the barn did not therefore act simply as productive thresholds between a *wholly* domesticated 'inside' and a wild 'out there' in the distance somewhere.

They were actively engaged in a continual ambiguous renegotiation between wildness and domestication, two - equally productive - characteristics of the therapeutic horse. In their analysis of the architectures erected around a study of mosquitoes Kelly and Lezaun (2017) detail an array of spaces from the least to the most naturalistic; from the lab through to the 'semi-field' and on to 'the field' or 'the outdoors'. The semi-field occurred as a space in which a laboriously fabricated interior décor produced a space in which mosquitoes might behave in a more 'natural' manner than in the lab.

In the case of Epona, I argue that the barn existed as something akin to the semi-field, in its operationalisation of the ambiguity effected by such a facsimile of the wild. However, the semi-field of the equestrian barn operated in a different way. The interior décor of the barn was designed - and tested and redesigned - to encourage the horses to be able to live in "as natural a way as possible", albeit within a constraining space where these possibilities were limited. It actively enacted horses to be simultaneously 'natural' and 'domesticated', rather than simply more natural as in the case of the spaces designed for making mosquitoes better for experimenting on. Further, it was not only the *interior décor* of the barn that was designed to encourage the horses to behave in as 'natural' a manner as possible. Laborious care *practices* were necessary in the production of the simultaneous wildness and domesticity of the barn and the therapeutic horses living within. As shown, a continual ambiguity and related concern about getting these care practices right permeated life at Epona. Below I expand upon how "the right environment" and productive ambiguous interplay of domestication and wildness in its creation were enacted by care practices.

The lack of 'true' wilderness and pressure on grazing space at Epona limiting the horses' ability to roam was not only key for a return to a more 'natural' equestrian digestive equilibrium with the land. It had a pervasive impact on the herd dynamics, related behaviours of the horses and their ability to work week after week as therapeutic animals. This concern with 'real' wilderness was reflected in Lottie's teaching regarding how to work with the horses, and an abiding concern not to anthropomorphise them. She made pains to engage with the horses on their own terms, rather than those projected onto them by humans. This engagement was never set, but always partial. On the first afternoon I shadowed Lottie on the yard she had showed me how to "accompany" the horses in from the field one by one. It was important that this was done by allowing them to "decide between them whose turn it is next". There was no set order in which they chose, and this process was to be repeated each time.

In my previous experience, the aim was to "catch" the horse. The closest horses to the gate would have headcollars with leadropes fastened around their heads as quickly as possible and led two or three at a time from the field to their respective stables. Depending on the size of the herd, and especially in the cold winter months this method would often lead to much commotion as the horses clamoured to get to the gate first. The same horses would tend to be first each time. Teeth would be bared, heels would fly. Here at Epona, the horses "decided" whose turn it was, and were brought in slowly and calmly, one at a time, with no ropes or headcollars. The stable doors were all left open in advance and we would walk alongside the horses, more in accompaniment than control, as they entered the stable they appeared to know was theirs.

I arrived at 8am as usual on Monday morning and started to get the yard ready before bringing the horses in from the field. Unusually, on this morning as I prepared feeds, I saw Lottie arrive. She joined me as I walked down the yards and out to the fields. From the large square opening at the end of the yard I could see Cally standing in the field with his nose poked over the gate and looking in our direction. The rest of the horses were loosely clumped around him. We stood and waited a few paces from the gate for the horses to "decide" who would be first to come in from the field. Arthur, a thick set, Highland horse began to make his way over to Cally and displaced him at the opening. Whilst not the tallest, he was the broadest, stockiest horse of the herd who, as I had found out that week to the detriment of my toes, liked to throw his weight around. "Oh, it's Arthur, there's a surprise!" I said jokingly to Lottie, "He's top dog, isn't he?". Lottie did not respond, clearly considering her answer and I regretted my throw away comment. I was still new at Epona and the importance of learning the 'Epona way' of working with the horses had been impressed upon me, lest I set back any of the careful training she had been working on.

Lottie waited a few seconds to make sure the horses' "decision" was final. She looked at Arthur and waited for him to get into the exact position she required of him before opening the gate; his body to the right of the opening where the gate meets the fence post, his head leaving adequate space for the gate to open and let him through. As she opened the gate for Arthur she began her response to my comment.

> It can seem that way. But, not really. You'll get to know Arthur the longer you spend with him. If you spend a day watching horses in the field and how they interact, you'll see that different horses will take precedence over the others at different times. It is not fixed, it changes according to need. Arthur just wants to come in more than Cally this morning. His need is greater.

She leaves this thought with me – that not only human-horse interactions, but horses' own interactions, are not set but instead intermittent and partial. Lottie and I took turns to wait at the gate for the "decision" and the correct positioning of the next horse.

With the horses in, hayed, fed and watered, Lottie made a start on writing up the board for the day's classes. This alternative view of the horse and its behaviours runs counter to dominance hierarchy theories of animal behaviour where one, or at most two horses (one male, one female) are dominant and keep the others 'in check'. This approach is informed by a specific understanding of animal interaction that implies a stable social dominance hierarchy between members. Lottie told me that these fixed theories were based on a cross pollination of assumptions about the behaviour the wolf pack and the notion of 'pecking order' introduced by Thorleif Schjelderup-Ebbe following from his study of the dominance hierarchy of chickens' "pecking order" in the 1920s. Dominance hierarchy is widely accepted and has become synonymous with equine herd dynamics in many equestrian circles. "So, you wouldn't say Arthur is the alpha horse of the herd?" I asked. "No, there's not really an alpha horse. Here we work with a resource need theory of herd dynamics, not one based on dominance". Before I could ask any more questions about this resources theory, Lottie had finished her board and headed off to the office to prepare for her day of teaching ahead.

A few weeks later I sat with the others in the small teaching room in the portacabin on the back yards of the centre listening to Mette, the equine behaviourist, give a talk on equine behaviour science. She echoed Lottie's critique of the dominance hierarchy model of equine dynamics. For Mette, these transanimorphic translations of ethological assumptions from studies of chickens and latterly wolves were inappropriate for encapsulating horses' true nature and behaviour. Tensions between the horses were understood not in terms of any set hierarchical "pecking order" or dominant behaviour from the "alpha horse", but to arise when pressure on resources such as space and grazing were increased, such as when kept in small "artificial" spaces such as the centre. Aggressive behaviours were thus understood by Lottie and the others at Epona to be driven by "need". When left to live in their "natural" state with enough resources aggressions between horses were considered rare. Discussions with Lottie regarding Arthur's behaviour described below expand upon this understanding.

As October passed and November gave way to December, the grazing began to grow limp and thin. To maintain what little was left in the fields and to avoid churning up the land, the horses came in to be stabled for most of the day. At night, they would be on "turn out" rotation. In attempts towards "as natural a life as possible" Lottie made sure that each horse had at least a few hours of turnout each day where possible, and turnout three or four nights out of seven. With the grass dwindling as the winter progressed, the horses needed more hay in their stables. According to Lottie, Saffy and Mette, this was not only to keep them sated but to allay boredom, anxiety and

poor gut health. Saffy told me, "horses weren't designed to only eat once or twice a day. And that's what we do by taking them out of the field, putting them in a stable all day or night and only giving them one or two haynets". Echoing Chrissie's concern with allowing for movement in the classroom to facilitate human learning, and especially that of children with autism, Saffy went on to note that horses were "designed to be outside, moving continuously. When we stick them in a stable, they get anxious and the gut doesn't work the way it should."

In the last few weeks, on his way around the centre, Arthur had taken to intermittently pulling away from his handler to run to the nearest patch of fresh grass on the verges of the fields. He would set his strong neck against the handler and bolt away from them. With around 500kg of thick set muscle there was no stopping him as I learned when he dragged me, arms outstretched and feet sliding in the mud vainly trying to keep a hold of him, from the barn to the grass verges. After a few such instances and wanting to find out how to stay congruent with the "Epona way" of finding a solution to the behaviour, I asked Lottie about it. In my own traditional Anglo-Irish training applying some pressure (so that when the horse pulled against you the tension was uncomfortable for him) – such as wearing a bridle when being moved from place to place - would be recommended. "Use your intent" she told me instead. "If you think he's going to pull away, he will. He'll pick up on your anxiety about it. So just have confidence that he's not going to do it, and he won't… We don't want to dominate them. Sometimes they behave in ways we don't normally associate as good behaviour because we don't understand their needs, or what they are trying to communicate to us."

Lottie's interpretation of Arthur's behaviour was that he was just hungry and was speaking back to the constraints being placed on him. If Epona had enough space and better-quality grazing, she told me, Arthur could be out much more, eating the right things. He wouldn't need to pull away from and evade the handlers because he wouldn't have to be kept off the grass. For Lottie, it was not Arthur's "true nature", but his living conditions within an unnatural, domesticated setting that was seen to produce dominating, aggressive, behaviours.

The implementation of these various care practices illustrates the way in which the architecture of the centre grounds constrained its ability to facilitate the horses' return to a 'natural' state. This forced the team of handlers and horses to engage with a continual ambiguity between the vision of 'real nature' and the sort of approximation able to be produced within the physical parameters of the centre. Saffy did not note finding this inherent contradiction in the active management and construction of a 'wild' environment for her herd of horses problematic. To her the space would

only ever be a partial facsimile of the wild. It was simply the best she could do with what she had available.

To summarise, whilst operationalising a safe, domesticated therapeutic animal able to 'become-human' and tune in to the therapeutic needs of their clients, practitioners simultaneously alluded and appealed to the 'true nature' of the horse as a wild being. Due to this continual renegotiation of characteristics of the horse, the relations between horses and handlers across time were fluid and continually reworked in engagements of 'being-alongside' (Latimer 2013). Practitioners continually referred to a wilderness in which the horses ought to live. The architecture of the centre – a repurposed 'toxic' dairy farm - and the geography of the close environs of the centre – hectares of agricultural fields – contributed to the perceived need for this renegotiation, working to make 'natural', yet simultaneously domesticate, the animals. Continual efforts to provide the most natural space and related care practices therein were promoted to alleviate tensions in the herd of horses and to enhance the horses' health and well-being. Therefore, just as the human-horse engagements were understood to always require active tinkering, so too were those enacted between the horses themselves. Horses' engagements with one another were perceived to be fluid and situational and based on "resource need" rather than fixed hierarchies. A never settled oscillation existed between wildness and domestication, two - equally productive - characteristics of the therapeutic horse.

In conclusion, with a focus on the spatial metaphors used by my interlocutors, this chapter has explored how "naturalness" was produced at my field sites. I have shown how this notion of naturalness was central to the AM strategy of providing "the right environment" and in producing therapeutic efficacy at my field sites. In my interlocutors view, "naturalness" and "the right physical environment" had to be produced for both clients and horses to flourish. I have argued that underscoring these perceived needs was an assumption that autistic people were somehow "wilder" than other people and that horses and autistic people shared specific needs for "natural" environments. Through their perceived resource needs: such as calming sensory spaces and the freedom to move, autistic people and therapeutic horses collectively and actively coproduced what I have referred to as an environmental niche in the context of my field sites.

I have shown that this coproduced environmental niche existed in ambivalent tensions between wildness and domestication, naturalness and the man-made. As a result of these tensions and ambiguities, providing "the right environment" was a source of continual effort and tinkering for practitioners of AM. This continual work was carried out to redress the perceived "unnaturalness" of, and constraint produced by, the stables environment for both clients and therapeutic horses.

I have argued that the stables and ranch acted as partial approximations of 'the wild' for both people and horses. I have argued that the care practices enacted therein formed part of these approximations. "Naturalness" and "the right environment" were never fully achieved, but rather always partial relations enacted within these architectural and performative spaces. The ambiguity between operationalising horses as simultaneously wild and tame in the spaces of the centre was productive of their therapeutic ability.

The continual experimentation with therapeutic architectures and practices and perceived partialities in human-horse, and horse-horse relationships detailed above are on-going boundary making processes between humans and horses at my field sites. They highlight the pervasive 'becoming-human' of horses, and the 'becoming-animal' of humans with autism being enacted at my field sites. These phenomena echo the uncertain boundaries between autistic humans and animals bound up in the history of the condition. I argue that these ambiguities reflect on-going societal preoccupations with human-exceptionalism and the making of boundaries between human and animal. I also argue that it is the epistemological uncertainty surrounding autism in particular, and the characterisation of the horse as something at once noble and domesticated, yet wild and free, that make the phenomena of equine therapy in autism a particularly fruitful working space for enacting these preoccupations.

This thesis details my interlocutors' enactment of autism as a sensorially-mediated condition enacted through a deeply enmeshed body-mind-world. It is structured around models of therapeutic efficacy that reduce in scale and move "in" to the body with each proceeding chapter. This chapter has detailed the first of these, relating to "the right environment" proposed to be the least debilitating to autistic people. It has explored the how this co-produces an environmental niche in which a particular kind of sensorially-mediated autism can emerge. The next chapter expands upon the perceived import of sensory issues in autism and their mingling with "the right environment".

CHAPTER 2 - "The Horse is the Pinnacle of Sensory Input": Stillness and Motion and the Thresholds of the Sensorium

By October 2015, I had been shadowing Chrissie in back-riding sessions with Andrew for three weeks. After the initial settling in period, she felt that showing no signs of distress or fear indicated his comfort in 'back-riding' with her. Andrew was a young boy aged five who lived at home with his mother, father and brother. Andrew's autism was severe, and he would repeat words that were said to him - known as echolalia or echolailic speech - but would not use words spontaneously or create sentences of his own. He was in his reception year at mainstream school where he was working on "social stories" and "life skills" with Lou, his teaching assistant (TA). Lou attended every session with him, alongside his ten-year old brother, Henry – also autistic – and Henry's teaching assistant, Carole.

Unusually, both ladies were full-time staff provided by the school to enable the boys' attendance and entirely dedicated to providing one-to-one care for each young boy. This level of support was extremely uncommon across the children in mainstream education who attended Epona. It was the focus of much envy from other parents aiming and struggling to get assisted places for their child within mainstream schools, or even a place at all. The TA's were warm and friendly and clearly enjoyed their trips out of school with the boys. Lou was young, enthusiastic, caring and visibly very fond of Andrew. Every Thursday morning during term time, they arrived from a school 10 miles away. The boys took turns to ride each week, alternating with a session in the sensory room or the large swing in the park, followed by a walk around the woods, features of the centre also considered to be beneficial.

When the weather was dry enough, the farmer allowed practitioners to take clients out around the edges of the wheat fields that constituted his 100-acre farm. It was nearing the end of the Winter and it had been a dry few weeks. As the path along the outside of the woods came to an end, they turned the corner at the edge of the fields where the horses grazed and emerged out into the open. It was scrub at the time; the stubbly ends of hay cut that summer poked out of the ground in golden bristles, the ground waiting for next year's new shoots. After 25 minutes of riding around the fields, Chrissie began to wind the 30-minute session down and directed us back towards the stables. Andrew moved his hands to rest on Chrissie's leg and she pointed it out to his TA and me. "He's really enjoying my jodhpurs just now". Lou confirmed the importance of touch for Andrew: "Oh yeah, they're ribbed, aren't they?... I went to a scrap material shop and got him loads of sensory things. It was amazing. Different types of ribbon and strings and zips."

Chrissie smiled in acknowledgement, encouraging the teaching assistant's interest in using toys as "sensory inputs". She suggested that this was a useful way to help her to get to know Andrew: "I always find it really interesting what a child will choose from these sensory packs that you get… it tells you so much about what that child likes." Chrissie was actively encouraging Lou to engage with what she saw as Andrew's "sensory needs". The framing of each AM session with Andrew and the discussions therein configured autism as a sensorially-mediated condition. This then moulded Lou's interactions with Andrew in his learning environments outside of the centre. These approaches were well received by Lou arguably due to her exposure to increasing reports of sensory issues in autism, which will be detailed later in the chapter. In attempts to help children like Andrew and Henry reach and embody calm, anxiety-free states Chrissie used a range of techniques to aid with "sensory integration", including squeezing, and horseback movement with increasing tempo. Just what the "integration" aspect of this aim meant for my interlocutors understanding of autism and sensory worlds more generally will be explored later in the chapter. For now, I discuss how this was believed to be achieved.

During a sunny day in mid-March 2016 whilst walking around the farmer's fields, the importance of squeezing became clear. Chrissie and I were taking Andrew out on his fortnightly back-riding session. After a few minutes Andrew leaned back, resting his body against Chrissie's. "You are really quite cuddly today, aren't you?", she asked him. In response to his affection, she squeezed him gently with her hands. Andrew leaned back in the saddle further and nestled in closer to her. She interpreted that Andrew was "sensory seeking": looking not only for a comforting cuddle but what she and others called "sensory integration" that she perceived to come from strong "sensory input". Putting the reins in one hand, she wrapped her free arm around his torso. We rode around like this for a while and after some time squeezing, Andrew's body had visibly relaxed in her arms. "He's gone all floppy", Chrissie told us affectionately. "It's like someone has pulled the plug out".

Chrissie's use of "squeezing" is a method taken from her AM training, which was devised after consultation with Dr Temple Grandin – an academic with what at the time would be considered classic autism as a child. Grandin emphasises the importance of sensory issues in autism, and particularly "deep pressure", which she found vital in helping her to cope. As she notes in her book *The Autistic Brain* "researchers have done hundreds of studies on autistics' problems with social communication and facial recognition, but they have neglected sensory issues […] my top priorities for autism research are accurate diagnoses and improved treatments for sensory problems" (Grandin and Panek 2014, viii). Chrissie had learned from her own experience with clients and from that of others such as Temple Grandin, Louis and Amy that for those who seek out "deep pressure" – some autistic people prefer light touch - squeezing helps them to "become

integrated" and reach a state of calm. This physiological change was understood as a direct response to the multi-faceted sensory input of back-riding; horseback movement and rhythm, and squeezing, all in the "natural environment".

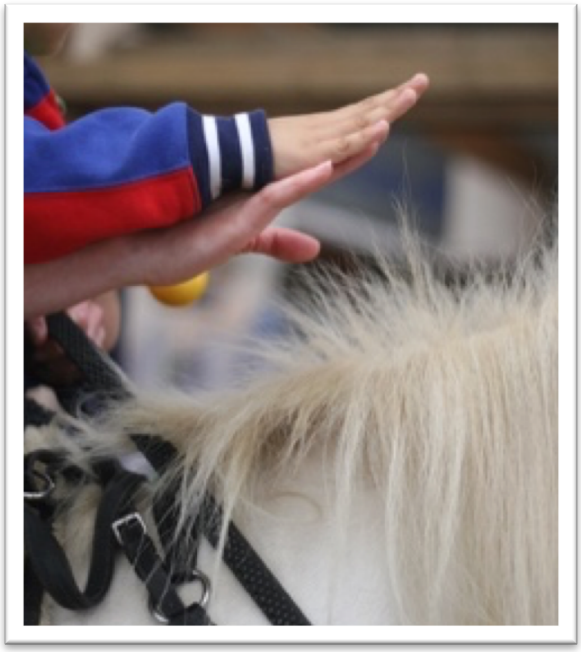
When the brothers arrived the next week for their session it was Henry's turn to take part in the AM session, whilst Andrew played in the park. Henry's TA Carole brought him into the arena to begin, and spoke with an unusually tense, strained voice. She recounted: "He's just head-butted me. Then dug his hands right in. Look". She showed us her bleeding hand. "Oh dear. Are you OK?", Chrissie asked. "Yeah. It's stinging but I'm all right." Feeling the high tension, and sensing its impact on Henry, Chrissie encouraged him onto the horse, and got outside as quickly as possible.

> Chrissie: Let's try and see if we can calm that down.
> Carole: He's got new wellies, that's what it is. They feel strange for him. I'll just wait until he calms down.
> Chrissie: He needs to learn the tools to do that. [Addressing Henry] You've got to learn to sort that out yourself, haven't you?
> *[Chrissie passes him a luminous green squeezing toy covered in rubbery bristles]*
> Chrissie: It's a bit chewier than your hand. And if you're in a place where you need to bite Henry, then I'd much rather you bit that than your own hand.
> Carole: He's got loads of chews and things like that and he'll use them and do that for so long and then he'll go back to his hand. He likes that pain.
> Chrissie: Yeah, it's sensory, isn't it?
> Carole: Yeah, it's that sensory. He does it when he's excited, or happy, or upset. All the time really. He does the same stimming movement of biting his hand. So, it's difficult to know what's wrong, or if anything's upsetting him. Can you see there? He's got a scar from it.

I looked at Henry's hand. A large crescent shaped scar stretched across the entirety of the soft, fleshy part of his hand where his thumb and index finger met. The wound that would have caused such a scar must have been huge, raw and repeatedly reopened. Henry sunk his teeth in hard to the scar on his hand. Carole pulled it out of his mouth to which he responded by glaring with furious, wide, bulging eyes and showed his bottom teeth. To dissipate the tension Chrissie changed the subject and got us outside quickly.

Chrissie hoped that through repeatedly entering states of calm each week it would begin to act as an anchor, and that the children would eventually learn how to reach this state themselves. The process by which this was understood to happen will be detailed in later chapters. These sessions were presumed to have a cumulative effect, for example helping to avoid Henry's violent and painful lashing out at both himself and Carole. By providing a lived experience of this process of calming; firstly, its being *possible* and secondly *how* it could be achieved, it was hoped that Andrew, Henry and others would develop new and more 'positive' ways to sooth their own discomfort,

enabling them to embody this disposition when they required it in future life. Further, they would hopefully be encouraged to seek out the contact of other things – and ultimately people - to achieve this integrated, calmed, internal state. In so doing clients were perceived to be able to become more integrated in the "external", social world. Not only this, the social world into which they were being encouraged to immerse themselves more fully would "open-up" to allow for such an immersion. It was hoped that by explicitly framing sessions around sensory needs parents and carers would vicariously learn to engage in what were promoted as more sensorially-mediated ways with their children.



'Seeking Contact' (Malcolm 2016)

Practitioners did not only offer advice and support regarding their insights about the child. Once relationships with parents, teachers and carers had developed they would signpost to resources they were aware of. At Epona this included the "sensory library" at a local special educational needs (SEN) school. Set up originally by a group of parents, the sensory library formed part of a learning support centre for parents of children with special needs, offering help and advice on funding, benefits, and education. This was open to parents whose children attended the school, but was also open to the public, and importantly, parents of children in mainstream education without access to the facilities of SEN establishments. Parents could borrow a range of sensory toys to try out with their child.

The need for such a library reflected both the diversity of sensorial preferences of autistic people and the price tag of the toys. "As soon as you put the word sensory in front of it, the price goes

up" the manager told me during a visit there. She explained that the library allowed parents to learn which toys their child liked before investing in them, and ultimately to get to know their child's world in a more nuanced way. This new awareness of TAs - and also parents and carers in relation to other clients – were perceived to help in addressing what Damian Milton has termed the 'double empathy problem' (2012) to acknowledge that it is not only autistic people that need to learn how to engage in intersubjective interactions. He argues that people off the spectrum are required to get to know what it is like to be autistic, including the role of sensory issues and the need to "stim", before meaningful relations can emerge. Practitioners therefore not only aimed to effect material changes in the bodies of clients through states of "sensory integration". By encouraging the people in their lives to make and facilitate these physical and behavioural affordances, they aimed to facilitate the integration of autistic people into social worlds.

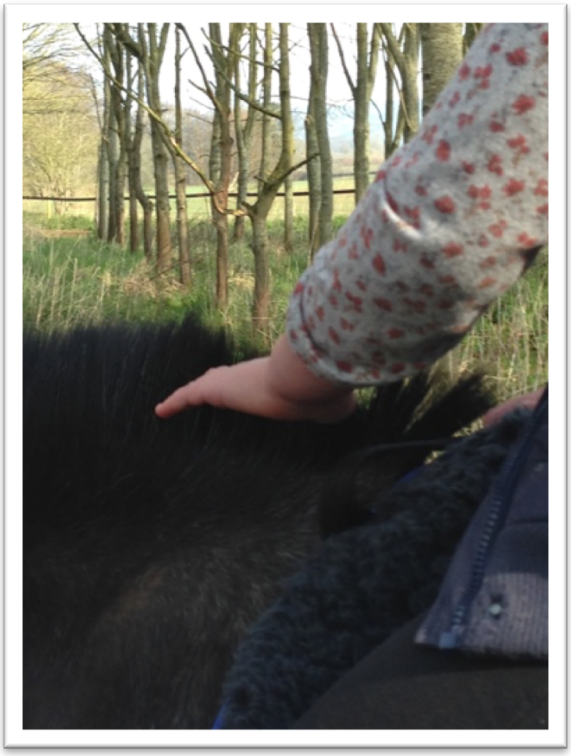
In this chapter I explore AM practitioners' definitions of the sensorial as a highly-situated site of processing of "inputs" and "outputs" and eventually "integration", forming a folk-model of the senses and their operation. Multisensory experience acted as an affective threshold linking what might be understood as the 'outside'; the built, 'natural' and 'human' environment, with that understood as the 'inside' of the body, its processes and the effervescence of these in the production of 'internal' experience. However, an alternative understanding of the senses as a more fluid threshold characterised by 'filtering' has been promoted by autistic people. How this threshold operated was therefore a focus of tension between practitioners and autistic people. Despite these differences, I argue that the people I got to know worked with a deeply rooted notion that the environment and body could shape the mind, and that the brain existed as a system open to the body and environment.

I focus on "sensory work" a term used to describe the work involved in helping people with "sensory processing issues" find spaces of what practitioners referred to as "sensory integration". These were afforded through the limiting of what were described by practitioners as "negative" external "sensory inputs", and the provision of intense, targeted, effective and importantly "positive" ones. Moving through spaces populated by "good sensory inputs" and especially horseback movement were understood to produce "sensory integration". These were experiential spaces of stillness free from sensory "overload" and "meltdown", terms used frequently by autistic people to articulate their experience. This equilibrium was found by balancing giving just enough "input" to achieve "integration", without tipping over into "overload". I refer to this simultaneity of movement and repose as stillness in motion. In producing these sensorially calm states, the later stages of AM with the aim of enabling communication and learning could be attempted (which I discuss in the following chapters). Learning and the establishment of communication

were thus perceived to be embodied processes, happening with and through the senses as clients moved through the spaces of the equine therapy centres. I will show that "sensory work" was thus not only perceived as an embodied process by my interlocutors. It was defined as one of emplacement (Ingold 2000, Howes 2005); a transcorporeal (Alaimo 2010) engagement of a sensorially-mediated body-self-world.

Gradations of "Sensory work"

After only a few weeks at my field sites, it was clear that Atalanta Method (AM) sessions were tightly framed around a conception of sensorial alterity in autism. Each person was considered to have a sensory profile of their own, one which the practitioners took significant time to get to know. Indeed, as I spent increasing time with clients I experienced some seeking out the world around them with a concentrated fascination I was not accustomed to in my own experience. Lottie, a therapeutic riding practitioner and Epona's yard manager, explained this to me one cold evening: "Some of the autistic clients are so sensitive, they have sensory processing problems that are so acute".



'Sensory-seeking' (Malcolm 2015)

This was not only the case for clients taking part in therapy sessions. As I spent more time at Epona I got to know Verity, a 20-year-old stable girl with ASD. She had ever changing brightly

coloured hair and a love not only of horses, but of wartime 'landgirl' clothing and memorabilia. For Verity, food textures were a cause of extreme disgust, anxiety and "overload". For as long as she could remember, she could eat only bland, beige food. Fruit and vegetables were completely unthinkable. "I just can't bear the texture in my mouth" she told me, her face contorting. These issues with food textures had wrought havoc with her health and, weighing less than seven stones, with her ability to keep up with the gruelling physical work of the yard.[18]

As practitioners saw it, AM was specifically designed to work with, rather than against, these sensory idiosyncrasies. Gradations of "inputs" were used to target and "regulate" the senses and increasingly applied as the child grew more settled and comfortable with the environment and practitioners. These ranged from simply being at the therapy centers out in the open air, surrounded by nature, to petting the horses and other animals there. More intense "sensory inputs" were understood to be offered by having the child or adult sit or lay across the horse's back in various positions without the use of a pad or saddle. The next increase in gradation would be horseback movement, being led around the grounds of the centre, through the woods.

Then, the practitioner's presence in the saddle with the child could be added. From here the practitioner could offer "deep pressure", understood to release the "bonding hormone" oxytocin which, as will be explored in detail in Chapter 6, was the hormonal marker of therapeutic efficacy as defined by AM. Then faster movements could be produced by shifting pace up to a trot. From here, once comfortable and safe together as a triad, the practitioner would move from walking to trotting, and then to a collected canter, understood by the AM method and its practitioners to have the most powerful effect for the client. This was due to its affordance of a combination of kinesthetic movement, and oxytocin release, all whilst receiving "therapy by stealth" in the distracting atmosphere of the stables. For practitioners, due to the multi-faceted "sensory input" offered by horseback ambulation – and moving through spaces populated by "good sensory triggers" - the horse was, as Paul told me "the pinnacle of sensory input". As will be explored in later chapters, this was a view shared by all AM practitioners.

Horses were seen by Atalanta Method (AM) practitioners as the ultimate tool for "regulating the senses", as I was told by Amy during my own training in the method as part of my fieldwork.

[18] Verity had been diagnosed with anorexia nervosa at a young age which had been used by others to explain her issues with food. However, it was a label she had always resisted, feeling that it did not fit. She had been seeking a diagnosis of ASD on the suggestion of a member of staff at Epona - and which she felt was more appropriate for her lived experience. This reassessment process had begun prior to our meeting in late 2015. Verity received a diagnosis of autism in August 2016.

> We can use the horse to help regulate the child's sensory system. Because what we've found is that if you put a child bareback on the horse and allow them to relax up there, to be body to body with the horse, to breath in the smell of the horse, to feel the horse with their body then that will immediately relax them. It seems to regulate their sensory system. Louis used to put Noah up there bareback on the horse. The minute he did that, if he was tantrumming [sic] it would stop. If he was stimming, you know banging, all that would stop. Clearly the stimming is something that kids with autism do to regulate the sensory system. He would be calm and open to communication. So, in the Atalanta Method we are very lucky to have the horse and we can use the horse to really target the child's sensory system.

Louis used scientific knowledges from a diversity of sources to support the claims of AM, the method he and his organisation were providing and promoting for children with autism. Encouraged by Louis during their training in the Atalanta Method (AM), both Paul and Chrissie had spent time reading and educating themselves in autism research from a range of sources. In their descriptions of how AM worked they referred to the same systems of the body as Louis.

As detailed in the Introduction, for practitioners autism was a complex condition, variously described to me as "neurodevelopmental', "neuroimmunodevelopmental" or "neuropsychiatric". Autism clearly had no singular site of existence in the body or mind, or biomarkers of aetiology in my interlocutors views. Rather it existed in the enactment of the body-self-world it is the work of this thesis to detail through exploring the practices of therapeutic efficacy. This chapter introduces the mobilisation of "sensory issues" in AM and unpacks the above claims. I argue that sensory issues were believed by practitioners and the older autistic people that I got to know to form a central loop of the body-self-world biofeedback systems by which the autistic condition and therefore therapeutic efficacy were produced, made and remade in the context of equine therapy. Ultimately through AM practices autism became defined as a primarily sensorially-mediated condition, a framing that affected how practitioners worked with clients' soma and psyche on a weekly basis.

The primacy of sensory engagement to clients' inhabitation in the world was central to my practitioner interlocutors' and some parents' understandings of the autistic condition. That is, not only the somatic correlates of idiosyncratic behaviours in social settings, but the lived experience of the condition of autism. I here purposefully refer to autistic condition, rather than the 'disorder' or 'disease' of autism. This assists in moving away from the pathologization of autism highlighted as problematic by autistic advocates, including my interlocutors with autism. In his recent article exploring his interlocutors' explanations of sensory idiosyncrasies Ben Belek (2019) has suggested a move from focusing on bodies with autism, to "autistic bodies" to acknowledge the ways in which autistic people in the UK have begun to articulate their experience through sensory idioms. A timely contribution, I here take one step further and will focus on autistic condition(s) (in the

plural to acknowledge the diversity of experience). This further encourages an exploration of not only the soma, but the lived experience of being autistic. This aims to encapsulate the ways in which sensory experiences become significantly formative for some autistic people and those they share their lives with[19].

Stillness in Motion: "Sensory Seeking" and "Stimming" as "Self-medication"

Sensory idiosyncrasies were considered productive of, and not peripheral to, the social and communicative difficulties experienced by clients with autism. This understanding situates AM practitioners' use of clients' sensory needs - as they understood it - as a mode of meaningfully engaging and building communicative bridges. These were perceived by practitioners (and practitioner parents) to lead "in" to the "self-focused" sensory worlds of their children. According to AM founder Louis following sensory idiosyncrasies and "stimming" in particular was central because "all of the clues to the brain are in there". "Stimming" is an autistic movement practice that was understood by the people I got to know as a form of autistic engagement in the world motivated by heightened sensory sensitivities. Engaging with each person's "stimming" practices offered access to learning about their 'heightened' sensory worlds. This was reported to offer practitioners and parents a knowledge of the workings of the person.

In order to provide a direct first-person account of sensory experiences in autism I here introduce Thomas, a young man in his early twenties dedicated to autistic advocacy and using natural horsemanship methods with horses, including his own, Freedom. Thomas was extremely eloquent and had published a book telling his life story. He also experienced profound additional needs as part of his autism and required help from care workers every week, indicating how "spikey" a profile of abilities and limitations a person with autism can experience. As such, situating him on a "spectrum" between what was until recently referred to as "high" or "low functioning" would not only be very difficult, but pointless, offering an entirely flattened understanding of him as a person. Thomas was very keen to make clear that "what people need to understand is that nothing changes about your autism from when you are little to when you grow up. The sensory problems and social problems and stimming are all there. You just develop better coping strategies."

[19] Whilst they are considered by some to be a universal feature of autism, I do not here align the research with the claims bound up in this view. This chapter and thesis focus particularly on those who report experiencing or are perceived to experience these idiosyncrasies. As laid out in the introduction, the focus of the thesis is on the ways in which equine therapy makes up a particular kind (Hacking 2007) of autism – a sensorially mediated one. It was this 'kind' of person with autism who would respond positively to the intervention and in so doing motivate their return, and therefore that I focus on here.

Coping with these difficulties manifested in a range of ways and particularly through the dynamic movement practices known as "stimming". These behaviours are particular to each person's sensory make up, needs and preferences. This can include tapping with the hands or feet, flapping the hands, extending and bunching the fingers, rocking, pacing, vocalisations and spinning among others. These are things we all engage in to some extent, but that are reported to become particularly pronounced in many autistic people. Stimming was understood by some of the practitioner-parents I got to know as helping "the cognitive come to the fore". Thomas instead described his own stimming habits as active strategies for helping him with day-to-day life. Stimming could be (somewhat crudely) compared to the blind man's stick, a form of extension of the mind of the person beyond the body and into the environment. This extension of the mind through stimming practices relates to what philosopher Erin Manning has called "autistic perception" (2013), a highly embodied and extended way of engaging with the world particular to (some) autistic people.

The DSM-5 (APA 2013) included sensory issues in its autism classification for the first time in 2013: "restricted, repetitive patterns of behavior, interests, or activities" (APA 2013). Defined as symptoms these practices are referred to as "stereotypies", implying that they have no aim or goal. This framing indicates an assumption that these movement practices equate to somehow being ontologically and socially 'stuck'. Instead of focusing on their form, the people I got to know were concerned instead with their function and referred to stimming as a medicative, ameliorative "coping strategy" for sensory idiosyncrasies. Thomas told me that "stimming is one of these strategies. This is something autistic people find incredibly soothing and pleasurable, it's kind of like a feeling of calm, happiness and pleasure". The autistic people, practitioners, parents, and teachers I got to know all understood stimming to be a way of altering state by reaching a physiologically calm space through soothing anxiety and stress. In so doing they acted to unstick people from debilitating states of "sensory overload" and "meltdown". This is contrary to the DSM-5 framing of them as pointless and static. As such they indicate the centrality of two inversions of movement and repose that I suggest held the incorporated layers of therapeutic efficacy together in the contexts of my field sites. These practices constitute what I call 'stillness in motion', that is the production of calm spaces through dynamic movements.

Paul, a practitioner and autism parent, referred to the stimming behaviour noted above as a form of "sensory seeking" and likened it to a form of autistic "self-medication". This echoed Thomas's definition of it as a "coping strategy" rather than a form of pathology that ought to be stopped or progressed from through therapy. For Paul stimming was "a practical way of meeting a need". Paul told me that,

> in autism generally, the importance of sensory issues is under appreciated… that's the thinking. You get the triad of impairments, but you never mention sensory stuff. AQ-10, AQ-40 [autism spectrum quotient scales], none of Baron-Cohen's[20] stuff, none of it mentions sensory difficulties. You look at any sort of autism spectrum difficulties or Pervasive Developmental Delays or whatever, only now, in the DSM-5, do they even start to mention sensory difficulties.[21]

Acknowledgement is beginning to grow within biomedical, therapeutic and care fields that sensory processing difficulties are an aspect of autistic ways of experiencing the world. In Paul's experience this awareness had come too late to have helped his son as he grew up. As Thomas explained, "if you see someone stimming, don't worry or try to stop them. Just leave them alone". Paul echoed these concerns: "The worst thing, which most schools are great at, is stopping it. You know, 'don't sit like that, don't slap your feet'. Which is exactly the wrong thing to do".

"Sensory Integration" and the Thresholds of the Sensorium

Although practitioner-parents unusually (for the time I was in the field) suggested a purposefulness of "sensory seeking" behaviours, sensory experience in autism was understood as a form of alterity and described by practitioners with the pathologising language of "sensory processing disorder" (SPD). AM practitioners assumed that autistic people required assistance to "integrate" the senses. Chrissie made this clear when discussing her daughter's experiences at school. For her, mainstream (rather than special educational needs) schools did not have appropriate understanding of sensory issues and related necessary training, to assist children with autism in the classroom. Occupational therapists had begun to help children with sensory problems to find coping strategies particular to their individual sensory needs.

Chrissie told me that in the area where Epona was based "a lot of the kids that have sensory problems have a sensory diet". This was defined by the local NHS Trust to be "a home or school treatment programme carefully scheduled and based on the concept that controlled sensory input can improve sensory disruptions and enhance occupational performance". Chrissie's own daughter had one prescribed for her sensory processing disorder (SPD) by an occupational therapist. Chrissie told me that it involved, "certain motions, swinging and that kind of stuff. Swinging and rocking provide the vestibular system with information for the senses". Indicating

[20] Simon Baron-Cohen is one of the world's leading autism experts and Professor of Psychopathology at the University of Cambridge. He developed the mindblindness and male brain theories of autism.
[21] Here Paul refers to the inclusion of hyper- and hypo-sensitivity in the DSM-5 as sub-criteria in 2013 (APA 2013).

that local understandings of "the senses" included the lesser evoked senses of proprioception and kinaesthesia.

The local NHS Foundation Trust had established a 'Sensory Integration Peer Support Group' led by the Head of Occupational Therapy and in 2013 – two years before I entered the field - published a 'Sensory Integration Policy'. This document defined SPD as "a neurological disorder that prevents the brain from receiving information needed to interpret sensory information correctly" (4). This stated that "the sensory signals do not get organised into appropriate responses; the impact can be on one or more senses affecting: Daily functioning, social and family relationships, behavioural changes, regulating emotions, self-esteem and learning" (4). Such policies, based upon sensory integration theory, are now in place across many NHS Foundation Trusts with occupational therapists responsible for diagnosing the condition and offering support and advice. Numerous articles in popular and academic science, parenting, autism and news presses over the last few years (see Deweerdt 2016, Conway 2018 for examples) reflect broader interest in sensory processing dysfunctions in a range of conditions. SPD is not yet included in the DSM-5 (APA 2013) although a Sensory Processing Disorder Working Group did attempt to have the condition included. The application was rejected however, suffice to say, SPD (or SID) is therefore emerging as a discrete condition to diagnose a new kind of person who experiences the world in sensorially idiosyncratic ways[22].

It is important to note that there is no certain definition of 'normal' sensory processing in biomedical researches upon which the diagnosis of sensory processing disorder (SPD) is based. What 'idiosyncratic' sensory experience refers to is slippery and there exists a lack of consensus around 'the senses': how many there actually are and how they relate cross-modally. The emergence of what has been termed the 'multisensory turn' within the neurological and psychological sciences reflects these broader uncertainties with what exactly it is that constitutes 'normal' sensory experience and how it works. Here autism acts as a working space for popular and scientific deliberations on multimodal sensory perception regarding how the senses can be individuated, if at all, and how sensory perception shapes our inhabitation of the world.

However, synaesthesia – the replacing of one sensory experience such as smell for another such as sound – is considered 'abnormal' and is very commonly experienced by autistic people. Whilst SPD was a stand-alone condition (used in the sphere of occupational therapy) it was seen as

[22] There is not sufficient scope within the parameters of the thesis to explore the emergence of SPD and this new kind of person (Hacking 2007) however it is of great interest and will be explored in a forthcoming article.

symptomatic of autism at my field sites, reflecting broader aligning of autism with sensory processing issues. In the area where I was based, SPD had begun to be used as a 'placeholder diagnosis' for children during the long process of being assessed for autism. The local Child and Adolescent Mental Health Services (CAMHS) was under extreme pressure. There were long waiting lists for assessment and combined with concerns regarding overdiagnosis and a lengthy assessment process motivated by a desire to get the diagnosis right, it could understandably take years to receive a diagnosis and associated assistance. A diagnosis of SPD allowed such children to more quickly access additional support at home from the department of occupational therapy and at school from teaching assistants, if they were in place. Paul, a trustee of Pegasus and autism parent, discussed his son's sensory issues with me, similarly defining them as SPD. The disorder is reported by sufferers to manifest as a spectrum of difficulty in integrating input from the senses: tactile, olfactory, taste, visual and aural systems and also the lesser noted sixth and seventh senses of the proprioceptive and vestibular systems.

More recently, the eighth sense of interoception – the sense of how one feels "inside" by becoming consciously aware of internal processes of the body has been implicated in sensory processing issues in autism (DuBois et al. 2016). Here I will briefly note that shared physiological architecture in brain and body is proposed to mediate the embodiment of emotion, in accord with 'peripheral' theories of emotion that propose a basis for emotional feelings in the central representation and perception of changes in bodily arousal (Lange & James 1967). In this view, emotional experience is governed by our ability to detect and perceive fluctuations in internal physiological state and the function of visceral organs (Seth 2013, Sherrington 1906, Garfinkel et al. 2016). Difficulties with the sense of interoception then, are being assumed to contribute to a difficulty with understanding the emotional experience of others in autism, through a lack of ability for vicarious identification.

Sensory integration theory was developed in 1972 by American educational psychologist and occupational therapist A.J. Ayres, building on the work of Charles Sherrington. Sherrington was a neurophysiologist known for his work on the function of the neurone and promoting the conceptualisation of the nervous system as a unitary, interlinked system (Pearce 2004). Ayres defined sensory integration as the organisation by the brain of input from the senses of the body for effective use in the environment (1972). After much research throughout the 1970s, Ayres established 'sensory integration therapy', and produced standardised tests for the disorder.

Whilst using the language of SPD and SID, Paul simultaneously problematized any simple understanding of the senses, particularly that they were separate entities that could be integrated

"inside" the body. He explained during an interview that in addition to the diversity of individual manifestations or "profiles" of autism he had experienced over the years each autistic person he had met and worked with had their own multidimensional sensorial mosaic. The senses could be highly entwined and intermingled with some people having hypersensitivities to one aspect of experience, and hyposensitivity to another. This problematised the notion of a simple hinge between 'inside' and 'outside', 'inputs' and 'outputs' and suggested instead a more fluid threshold for experiencing one's inhabitation in world. Relatedly, this was an inhabitation of self that extended out into and was enacted by the textures, sounds, sights and smells of the environment. One person might find light touch intolerable yet seek out "deep pressure". Another might be terrified by the sound of one type of vehicle on the road such as a motorbike but love the sound of a lorry.

Paul challenged a common preconception that "sensory disorder" meant that *one* of what we understand as "the five senses" was out of balance with the others:

> The sensory stuff, most people understand it as being about the five senses. They don't necessarily understand the effect on the mental processes of all of it, hyposensitivity, hypersensitivity, or a complex mixture of the two, because people think 'oh you're sensitive to skin touch so you must be overly sensitive to all touch'. No! 'I'm oversensitive to light', or 'taste'. Or 'I get synaesthesia, so I hear colours'.

The sensory geography in which autistic people live necessitates active and ongoing processes of mapping social space in the hopes of successfully navigating and engaging with the world. This is difficult to grasp for those unfamiliar with the experience of the condition (Davidson and Henderson 2010). As Paul comments, sensory idiosyncrasies in autism represent "a level of complexity that most professionals will never come across. But need to".

Autistic autobiographers similarly problematise the classic model of receiving "inputs" or signals from five senses which are then integrated in the brain. Some people have referred to their sensory difficulties not as a problem of "integration" but of filtering: "I can't filter out the relevant from the non-relevant sensory stimuli" (Darius 2002, 34). One or more senses may be under or over active, producing what the people I got to know referred to as an unpredictable and confusing "imbalance" in levels of "input" from each. Donna Williams uses the metaphor of a television to communicate imbalance: "If your TV has ever been out of order where you get a picture, but the sound is gone, or you get the sound, but the picture goes, this is a bit like what sensory systems shutdowns are like. These affect the ability to process sensory information on several channels at once" (Williams 2005, 131). Whilst initially somewhat similar, I suggest that "filtering" holds less mechanistic and pathologising connotations than the "processing" of "sensory processing disorder". It also suggests an alternative view of the senses and their operation as more fluid, less

sequentially organised and formed less around a distinction between bodily "insides" and "outsides", and "inputs" and "outputs". People, light, sun, heat, and water can all filter, moving of their own accord in and through and with other aspects of the environment we inhabit.

Relatedly this highlights a lack of fit and political economy of truth (Foucault 1980) between the experience of sensory idiosyncrasies and the ways in which they have become articulated via the particular biomedical and quasi-biomedical terminologies used by the AM method and its practitioners. Paul and others acknowledged and worked within the parameters of sensory difference, getting to know each client's idiosyncratic engagement with the world. Paul and Chrissie who had trained in AM and were now offering their own interpretation of the method's practices did not assert the classic notion of the five senses but rather the sensorial alterity of the clients they got to know alongside their own experiences with their children. However, their training in AM did refer to biomedical languages of "inputs" and "outputs" and both Chrissie and Paul used the terminology of "integration" and SPD. This reflects a potential difficulty in finding appropriate language for fully accounting for these differences.

Transcending any mind-body division bound up in social scientific language that has been heavily influenced by dualistic Enlightenment thinking anthropologist David Howes promotes the use of the term 'sensorium' rather than 'senses'. The term 'the senses', he suggests has the action of not only pluralising these perceptual systems into five senses but also of internalising the sensorial. I suggest that this is a useful approach for exploring the sensory experience of my interlocutors with autism, acknowledging as it does the ways in which the sensorium is lived, not as five distinct senses; sight, touch, taste, smell, sound but rather much of the time as a shifting kaleidoscope of - at times anxiety producing and at others pleasurable - experience. As Merleau-Ponty suggests the body is not only definable as 'having senses', but as being sensible – that is embodied with a sense organ of entwined vision and touch whereby one's hands for example become "one sole organ of experience" (1968, 141). Exploring both our notions regarding, and experiences of, the sensorium as culturally constructed allows us to move beyond a historical and medical gaze on 'the senses' as an escape from culture to 'nature' and the 'natural'.

"The senses" in the context of equine therapy centres in the UK utilised the schema of SPD and "sensory integration" which referred to the vestibular and proprioceptive senses, as well as the traditional five senses. The additional sensory information to which Chrissie referred was sought and received not only by feeling, seeing, smelling, touching or hearing the environment one inhabited - but also by moving through it. This "helps you to regulate the senses. And that's what a lot of stimming is about. Your brain is just seeking that additional sensory information." Thus,

horse therapy sessions were considered to offer numerous "good sensory triggers" and the type of input that autistic people were thought to find beneficial. These good triggers included 'nature', natural light and animals and were contrasted with "bad sensory triggers" that caused overload and meltdown; for instance, strip lighting, synthesised smells, and loud noises. As Louis put it, "there's no bad sensory triggers outside. Most of the bad sensory triggers that block learning are man-made".

Alternative sensory experiences are not unique to the people I spoke with during my fieldwork. Rather, sensory idiosyncrasies are often cited as one of the most debilitating aspects of autism spectrum disorders (Chamak 2008), with many autistic advocates and autobiographers stating these as the cause of much of their social and communication difficulties (see Williams 1998, Grandin & Scariano [1986] 2005). In 2013, after much consultation with the Autism Self-Advocacy Network (ASAN), sensory hyper- and hypo-sensitivities were included in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). A review of the content of the autism website forum Wrong Planet in 2014 found 44,600 posts referencing sensory difficulties such as "overload" and "meltdown". In 2017 the NAS ran a 'Too Much Information' campaign, highlighting the confusion and overload that can be experienced by autistic people in public spaces. These provide some wider context for the enactment of sensory idiosyncrasies in the UK, suggesting that these issues are not isolated to the equine therapy centres in focus.

Alongside the introduction of sensory integration policies by UK NHS Foundation Trusts, the above indicate that sensory issues in autism have very recently begun to loop (Hacking 2007) becoming part of the broader autism nexus. I suggest that autistic people expressed their condition as something that permeated their lived experience in deeply embodied ways. As noted, first person reports of living with autism have emerged via the autistic advocacy movement and genre of autistic autobiography. Ian Hacking has explored the emergence of these first person reports and suggests that in autism "they are entrenching a language in a domain where there was no language at all fifty years ago, and not much twenty-five years ago. We are participating in a living experiment in concept formation of a sort that does not come more than once in a dozen lifetimes" (2009b, 506).

To date, autism studies has focused on exploring the condition through the non-biological and inanimate, particularly via references to information technology to the exclusion of the lively and biological, such as the role of nonhuman animals in the lives of autistic people. In Hacking's work on looping effects in the context of autism, despite wide reporting within the autistic

autobiography genre, the sensory experience of autistic people is unexplored. Instead, and I argue understandably due to his focus on exploring what were popular understandings of autism at the time, Hacking looks to the Internet and the neurological, and the pervasive associations of these aspects with an assumed inanimate thingness of autism. I argue that currently popular understandings of autism and relatedly the experience of the condition are also being mediated in more sensory idioms. In relation to the aims of the thesis, the enactment of autism within the context of equine therapy reflects broader popular shifts towards the sensorial and appeals towards a kind of holism of body and mind.

After the passing of a number of decades since the emergence of autistic autobiography and advocacy, sensory idiosyncrasies were translated into biomedical knowledges and taken up by the DSM-5 (APA 2013) as part of the classification. I argue that sensory issues thus constitute another aspect of the looping process so well defined by Ian Hacking (2007). Constituting the following movement of the loop as I see it, with the category now shifted, new populations of people who experience social awkwardness/issues in sensorially mediated ways now have a way to come to identify as autistic where such an opportunity did not previously exist. Looping in the case of autism cannot fully be comprehended as a metaphorical engagement of the neurodiverse with abstract representations to form identities around a psychiatric classification. It is also created in highly sensorial, embodied and material ways. The autistic people that I got to know did not simply 'think' of themselves as 'neurodiverse', they 'felt' that they experienced the world in sensorially alternative ways. These sensory differences, whether innate or adaptive, will have material effects through idiosyncratic inhabitations with the world, whatever those effects may be. Relatedly, AM is more likely to attract and "work" (in the sensorially mediated ways defined by practitioners) for those people who present with sensory issues as part of their autism. As the classification of autism shifts and becomes sensorialised new populations comprised of potentially alternative biological forms – including of the sensorium - are being classified and come to constitute 'autistic people'.

The above adds lively new material dimensions to the looping of the autism 'epidemic'. Whilst Hacking has always iterated his position that human kinds are 'real', looping tends to be viewed from a social constructivist perspective. The social constructivist approach explores the ways in which people engage and identify with the clinical category as a representation of autism, to the exclusion of its performative and material aspects. Equine therapy, and other non-horse based sensory therapies have emerged in the UK and USA in response to local needs and in so doing are contributing to the sensorialising of the condition. By being promoted as efficacious in relation to autism particularly through the notion of sensory difference and difficulties, they emphasise

the sensorial aspect of the condition. And potentially vice versa, because it attracts and sustains clients with sensory issues as part of their autism, perceptions of the efficacy of equine therapy are enhanced by its "effects" on autism.

To summarise, "sensory work" was a term used to describe the provision of intense, targeted, effective and importantly "positive", sensory input to help with integration difficulties. In autistic clients, the senses were therefore understood to take active work to become "integrated" and in so doing provide effective messaging from "inputs" from the environment, via the nerves of the body and the person's experience of moving through the world. These languages of "input" and "integration" were used by AM practitioners yet proved to be poor heuristics for understanding their, and their clients' experiences of sensory idiosyncrasies. "Integration" here was defined in terms of Ayres' formalisation meaning the effective processing of sensory input from the body to the brain. However, this construction of how the senses operated was problematized by the experience of sheer sensory complexity by the people I got to know.

As noted in Chapter 1, "the right environment" and "sensory issues" were deeply melded in my interlocutors' accounts of AM. The section below briefly consolidates my exploration of this melding. To reiterate for the reader, I have argued that this incorporation constitutes an environmental niche coproduced by horses and autistic people. Further, I suggest that this is one of the modes through which AM practices could enact autism as a sensorially-mediated condition of the body-self-world.

Emplaced Sensory Experience: The Mingling of "Sensory Issues" and "The Right Environment"

As Paul told me, the horse was the "pinnacle" of sensory input. However, horseback movement through "the right environment" and the aspects constituting this environment explored in Chapter 1 were seen as intrinsic to achieving "sensory integration" and relatedly therapeutic efficacy. **"**What you've got is a whole gamut of sensory tools" Paul told me, "the environment, the light level, everything". AM practitioners often emphasised the incorporation of the 'natural' environment and idiosyncratic sensory experience in effecting therapeutic goals. I detail this through the session with Henry in the woods described below.

Henry had started to lean over towards Chrissie, his head gently sitting to the right-hand side as she walked alongside him[23]. I let her know that he was leaning over. She encouraged him to correct his position, which he knew how to do. He shifted his hips and leaned the other way until he was sitting straight in the saddle. We walked on again along the muddy, leaf strewn path but he was soon leaning over again. "Let's just stop for a minute" Chrissie instructed. She helped him correct his position in the saddle. We were beside the part of the stream that sounded the loudest, and Henry looked over to the water. The sun dappled through the trees, finally warm on the skin after the winter. He made a zigzag of his body to take his ear closer to the sound of the water, his hips sloped to the right, his torso leaned off to the left.

I let Sylvan's head loose and the horse stretched his neck down to pick at the sparse grass at my feet. As he did so he took some small steps forward with his front feet. This caused Henry to shift in the sheepskin to keep his balance, building on what were described as the "sensory inputs" from the 'natural' environment; of the sound of the stream and the dappled light and heat on his face. Henry looked relaxed and satisfied, his face calm with a look of pleasure. We stood there for a few moments and he looked down at the stick at my feet. I responded by picking it up and passing it to him. He grabbed it and threw it into the water with great delight. We stayed there for a while longer before Chrissie moved us on, "I've got another client, unfortunately." We chatted after the session, and I asked about this point where we stopped, where one can both see and hear the stream. "Yeah it's really sensory that corner. It's really good".

Indicating an awareness to provide "good sensory inputs" wherever possible and in as many formats as possible to cater for the diversity of human "sensory needs" each of the three sites had purpose-built sensory architectures. With a range of resource levels at their fingertips the extent and quality of these varied across each site. All sites, even the least established site Pegasus, had a park area with special swings, climbing frames and slides selected for maximising sensory input. Both Epona and Pegasus boasted a "sensory room". These were purpose-built rooms with flashing lights, luminous floors, mirrored walls, glowing bubble tubes, beanbags, spinning projections and music. Each aspect had its own switch, meaning the experience could be catered to the child's preferences. These rooms were the least natural looking spaces imaginable. Yet these engineered rooms are increasingly common in special educational needs establishments. Epona, as the most established organisation in terms of infrastructure and equipment, had the largest and best equipped such space. It was seen by practitioners, parents, teachers and carers to offer a

[23] Henry had been back-riding since the age of four but was now too big to fit in the saddle with Chrissie. He rode in a sheepskin independently, which two side-walkers, including Chrissie.

calming effect, in the same counterintuitive way as long periods of swinging or deep pressure from squeezing might.

Such 'natural' and human-made spaces, in addition to the horses, were thus manipulated to provide clients with autism with related 'internal' spaces of calm. It was suggested that once established these spaces could then facilitate communication and learning. Following in the phenomenological tradition of Maurice Merleau-Ponty, Michel Serres and Thomas Csordas, Howes suggests we attend to the senses as an enculturated mode of engaging with the world, which are ultimately and irreducibly not only embodied, but also 'emplaced' (Howes 2005). Cognitive engagement - learning and meaningful communication - was viewed not only as highly embodied in the case of the sensorial contact of the horse and child and extended in the use of the practice of stimming but could be seen to be *emplaced* within the sensory contours of these infrastructures.

In conclusion, sensory processing issues and "sensory processing disorder" (SPD) were understood as central to autism in the context of AM. The aim of "sensory work" was to assist people with sensory issues, including those on the autism spectrum, with finding spaces of "sensory integration". These were perceived to be spaces of stillness free from "sensory overload" and "meltdown". This was achieved by finding ways to provide targeted, "positive" "sensory input" via a range of methods. These included; body contact with horses, with practitioners in back-riding sessions, and "the right environment" (as detailed in the previous chapter). Riding atop the horse in a collected canter was understood by AM and its practitioners as the "pinnacle" of "sensory input". Gradations of contact across methods of "sensory work" were believed to elicit increasing levels of relaxation and calm and relatedly, as explored in more detail in Chapter 6, increasing flows of the hormone "oxytocin". This was understood to be effected in direct correlation to the intensity of body to body contact between client, horse and practitioner.

A range of other infrastructures designed to calm the senses were available, including sensory rooms, large swings in playparks and woodland trails, streams and fields. These offered additional contours which were at times used in combination with, or as an alternative to, horse-based "sensory work". I have suggested that the perceived effects of horseback movement and "sensory work" can be comprehended as stillness in motion: a simultaneity of movement and repose. I have argued that the ambivalence between these aspects reflects the uncertainties surrounding autism, therapeutic efficacy, and the dynamic bodily systems engaged with by my interlocutors.

I suggest that particular biomedical and quasi-biomedical framings of "the senses" as distinct entities requiring integration through 'normal' processing of "inputs" and "outputs" and bound up in the condition of "sensory processing disorder" (SPD) were used for making sense of "the senses" by the people I got to know. However, these metaphors did not fully comprehend their experiences. Whilst the autistic people I got to know did use terms such as "sensory overload" and "meltdown", they did not express a desire to achieve "sensory integration" or use the pathologising language of SPD that was used by practitioners to explain their difficulties. That the metaphors used by autistic people, parents and practitioners were at times in line and at others out of sync reflects uncertainty regarding sensory perception and those knowledges available to them for comprehending them.

These tensions between differing representations of the senses and their operation reflects a political economy of truth (Foucault 1980). This is bound up in contrasting perspectives on medicalisation and curing, and demedicalisation and coping in the autism nexus. In a context of increasing pressure from autistic publics to demedicalise the condition, practitioners continually noted that they did not aim to remove the child's autism but instead make living with autism less challenging. My interlocutors with autism were not critical of the approaches used by practitioners or parents, unless they were being used to actively turn what they understood to be a human *condition*, a way of being in the world, into pathology.

Mostly, they were encouraging and pleased to encounter therapists and others who had taken the time to learn about sensory idiosyncrasies and "stimming" practices and were working with rather than against them. Ultimately, this tension between "integration" and "filtering" requires that sensory experience be understood as a biocultural system. By seeing sensory experience as something that is at once a material and encultured mode of inhabiting worlds, we are afforded the means to understand "sensory processing disorder" as a folk model of the sensorium. The practices of AM were designed around this sensorialised understanding of autism and "sensory processing" and attempted to shape the designed exposure of autistic people to the world, inform somatic inhabitations in it, and alter the world enacted around clients by the behaviours and attitudes of the parents and carers they shared their lives with.

Broadly I argue that the Atalanta Method of equine therapy acts as a site of looping effects in autism and that this looping constitutes a sensorialising of the condition of autism. This process is not merely produced by the morphing of the classification, but also of the morphing of the biological bodies being classified. Therefore relatedly, as the classification of autism shifts and becomes sensorialised, new populations of sensorially diverse people are being classified and

come to constitute 'autistic people'. As detailed in the introduction, autism often acts as a working space for reflecting upon societal concerns. I argue that the proliferation of interest in sensory issues in autism, including the incorporation of the condition "sensory processing disorder" reflects wider Anglo-American concerns with sensory selves and understanding the effervescence of mind through the body.

These wider concerns are illustrated by very recent developments in neuroscientific and psychological research on multisensory perception, for example. Chapters 1 and 2 have introduced the idea that my interlocutors promoted an emplaced sensory body in autism that I argue was enacted through the practices of AM and within what I have conceptualised as an environmental niche. The next section of the thesis (Chapters 3 and 4) extends this notion further by fleshing out what I refer to as the behavioural niche, also coproduced by horses and humans on and off the spectrum in the context of AM practices. This is the second of three niches that I argue enacted the sensorially-mediated kind of autism evident at my field sites and that is thus bound up in current looping processes in autism.

CHAPTER 3 - "Finding the Right Pressure" … "It Is All About Timing": Therapeutic Rhythms and Temporalities of Care

It was a bitterly cold February day when Frankie first visited Epona. It was few weeks prior to his first session and Saffy, Epona's centre manager, had asked me to show the family around. Frankie was four years old and had been diagnosed with autism the year before I met him. He wore a down jacket and a blue shearling hat with flaps pulled over his ears and tied under his chin. In his small hand nestled three large plastic toys: a big, red Duplo brick; a blue plastic tube that was faded and pale at one end, worn thin from being chewed for some time; and a yellow drumstick. His parents, Bilal and Leena were a very pleasant couple in their early forties, who had moved from Iran to England 15 years ago. Leena was impeccably dressed in warm country attire that day – Barbour wellingtons, a waxed jacket and silk scarf. I led the family out the other side of the barn and stables towards the indoor arena. Around 10 yards away from the barn we spread out in a line, with Leena at the back having stopped after realising that Frankie was not following us. He had instead decided to stand beside Sylvan, the horse tied up outside the barn ready to be tacked up. Bilal and Leena looked on as I explained that this was the back-riding horse.

Frankie stood a few feet away from the horse, squeaking and squealing warmly and springing up and down from the knees whilst keeping his feet on the ground and his collection of plastic toys in his hand. We began to move off so that I could show them the rest of the centre. Frankie stayed in that spot beside Sylvan until his father picked him up. Nestling him on his hip, Bilal carried Frankie as we made our way around the centre. As we walked they told me that a family friend happened to be a paediatrician and whilst visiting he had noticed that Frankie may have additional needs after spending time with him. He was later diagnosed with hearing loss through the NHS before Leena took him to Iran for further investigation after feeling this was not a comprehensive diagnosis for her son.

When he returned for his first session Frankie seemed excited to be back, and still grasped the same three plastic toys in his tiny hand. Chrissie and I were in the arena, locating a helmet for Frankie. She was struggling to find one to fit his head and whilst Frankie was very calm for a child in a new environment, his noises started to rise in volume and frequency as the time and hats passed. "Maybe we should just get him on the horse" his father advised, aware that the more we messed around, the more uptight Frankie would become. Heeding his advice Chrissie got into the sheepskin saddle and Bilal passed Frankie up to her. Once securely in place and with her arms around Frankie's waist, I led Sylvan forward and they started to walk around the arena. Bilal left the arena and stood in the gallery whilst Leena stayed by the horse's side. Frankie babbled and made relaxed sounds, and Chrissie motioned that we could head out into the orchard trail. We

walked down the path past the playpark and fields and into the woods. Chrissie patted his chest in time to the rhythm of Sylvan's steps as we walked under the canopy of bare branches. She began to pick up information about his sensory preferences from Leena as we walked. "Does he like swings and going fast?" she asked. "Yes. He loves going on rides too", Leena told her. After hearing this Chrissie increased the pace from walk to trot, hoping to "get the oxytocin flowing". "Let's try a few paces of trot, Ros".

As it was his first week, Chrissie did not hold the reins as usual, freeing up her arms for wrapping around Frankie, securing him in the saddle. As they moved up into trot, Sylvan's legs moved more quickly underneath him, shifting from a four-beat movement to two. As the horse propelled himself and the pair forward, Frankie's body was forced forward and back in response. He made no protest to the change in sensation and Chrissie was relieved. We slowed back to walk and kept making our way around the trail. After 30-minutes of transitions between walk and trot Chrissie passed Frankie down to his father and dismounted. "Well that went really well. I think he's going to really enjoy it". Chrissie loosened Sylvan's tack and we walked back up the small slope to the stables. She fed back to me how she thought the session went. "I think he's the kind of kid that would really benefit from longer sessions. It's a shame we had to stop. He was really getting into it… More trotting would have been good for him". I asked if she always tried to trot during a first session.

> I don't always necessarily trot on the first session. Especially when the child doesn't have a hat on. But because he was doing scooping motions… I think when kids want to go a bit faster they just naturally [makes motion with hips and arms] use their body to try and edge the horse along a bit. And because he was doing that I thought I'll just try it and see. That's why I asked Frankie's mum, 'does he like swings?', and 'does he like going fast?' and you know, 'is he a sensory seeker?'.

This excerpt details for the reader the embodied intuiting of each clients' sensory world carried out by practitioners of the Atalanta Method.

This chapter focuses on these bodily attunements coproduced by horses, practitioners and clients of the therapy. The chapter introduces the behavioural aspects bound up in my interlocutors' models of therapeutic efficacy and in concert with the following chapter, details a behavioural niche through which autism became enacted at my field sites. As noted in the Introduction, the people I got to know experienced significant levels of epistemological uncertainty around the condition of autism. This was reflected in their use of interwoven material metaphors of "integration", "balance" and "pressure", used to encapsulate the dynamic condition and bodily systems involved in the autism-equine therapy nexus. The first of these was "sensory integration" explored in Chapter 2. This chapter moves on to detail the second of these by focusing on

Chrissie's descriptions of "finding the right pressure" in AM sessions and her assertion that achieving this was central to effecting change in her clients. This constituted a move from "deep pressure" applied to the body to achieve "sensory integration" (and explored in Chapter 2), to "finding the right pressure", an on-going practice of embodied, relational attunement. This "right pressure" was perceived to be found in gently pressuring and releasing before pushing clients over into a state of "sensory overload". The chapter describes Chrissie's understanding that "finding the right pressure" lay in finding "balance" between these aspects. It explores how practitioners perceived the maintenance of this "balance" between "sensory integration", "sensory overload" and therapeutic progress. It describes how in order to sense, and productively work with this intuited threshold between "sensory overload" and "integration" and relatedly therapeutic progress, practitioners had to learn to speak and listen with the body, "tuning in" and "out" of resonant engagements. This slow building of a communicative repertoire between client, practitioner and horse took significant amounts of time.

I argue that the above process indicates a shift in my interlocutors' model from inculcating immediate states of "sensory integration" to more lasting social integration via the development of a behavioural repertoire. This is introduced by Paul, a practitioner at Pegasus, and then described in detail as we follow Frankie and his family over 10 months of sessions. The chapter introduces the spatiotemporal themes that are developed in the following chapters of the thesis. Viewing each session as an orchestration and expanding upon the musical metaphor of "tuning in" used by my interlocutors the chapter traces the simultaneity of expanding temporalities inferred by both the embodied experience of the phenomena and the ways it was described to me by the people I got to know.

Firstly, horseback movement was viewed as central to the efficacy of the therapy, as explored in Chapter 2. Secondly and as explored in detail here, the repetition of weekly sessions through time was believed to inculcate in the client the ability to easily enter calm states of anchoring stillness in the future. This was seen as central to the efficacy of the therapy by the practitioners I got to know. I will show that through these weekly sessions, new mutually embodied attunements were understood to lead to the building of not only temporal but social synchrony between practitioner, client and horse. By holding together many moving parts in harmonious proportion, a kinetic melody could be achieved and effect therapeutic efficacy - as defined by practitioners.

As I will show, for Chrissie "finding the right pressure" was "all about timing". As I will introduce below, three therapeutic rhythms held my informants' models of therapeutic efficacy together and are detailed by the thesis. As I have already noted, taken broadly the interplay of movement and

repose best encapsulates this proliferation of metaphors used by my interlocutors. As such, throughout the thesis I use this interplay of stillness and motion to structure my informants' unruly models of efficacy.

From "Deep Pressure" to "Finding the Right Pressure"

As introduced in Chapter 2 on "sensory work" clients with autism foregrounded the sensory difficulties they faced, promoting them as central, rather than peripheral to their condition. These difficulties were described as a state of confusion. Some had a condition known as synaesthesia, where one hears a smell, or sees a sensation as a colour. These experiences at times caused extreme anxiety, taking the focus of my interlocutors and leaving them unable to concentrate on communicating and following social scripts. In response to this foregrounding by their clients, practitioners focused sessions on what they understood to be the sensorial difference, or in medicalised terms "sensory integration disorder", of their clients with autism. Practitioners prioritised sensory needs when learning how to attend to their clients with the assistance of therapeutic horses. In so doing they used a range of embodied, horse-based methods: sensory work, double back-riding and deep pressure to cause the release of oxytocin in the brain. By "tuning in" to the sensorial profiles and requirements of their clients, practitioners attuned to the appropriate way to respond to clients' to help them find a state of stillness. In these states clients were understood to no longer inhabit a world of sensorial confusion and discomfort, but instead a relaxed, calm state in which communication and learning could be enhanced.

Paul refers to working with this state of "receptivity" during one of our many lengthy interviews:

> The oxytocin release is interesting, and it's complex, but put simply it tends to stimulate social and communication centres of the brain […] So, anything that stimulates those receptors is good. You then need to fill that receptivity with appropriate stuff.

This "stuff" included varying intensities of contact with and speed of the horse. In addition to the equine interactions, it also included the range of sensory input available from the "natural environment" as well as the contours of the other infrastructures of each centre: particularly the sensory room and playpark. Yet "filling that receptivity" was not as straightforward as Paul's comment suggests. Practitioners had to sensitively attune to the client to as Chrissie put it, "find the right pressure" to balance therapeutic progress and comfort. This existed in a fine balance between pushing the client to engage more, without "overloading" them and causing them to leave the receptive state of calm.

Paul explains how finding this balance in the more advanced sessions worked. After getting to a space of calm, the client was understood to only take on so much before having to take some time out to "process":

> They are interacting externally, then they'll internally process it. And you just have to stop because if you carry on loading them with things they cannot deal with… you'll see them stopping. You might see them engaging in sensory seeking and engagement […] It's good stuff [sensory input], they like it, but you can swamp them, and you get shut down. And that information overload is not unusual. It's very common across the entire spectrum. We've got a bandwidth, yeah?

And so, for Paul, we all have a "bandwidth", an available capacity for processing signals via "the senses" effectively, before we "meltdown". He emphasised the need to be continually aware of where the balance and thus the "right pressure" lay for each client during each session, directly related to their particular sensitivities and specific "good" and "bad triggers". Of note here is that this constituted a deepening in practitioners' understanding of sensory symptoms of clients, from simple "triggers" in the environment to a more complex awareness of the "bandwidth". This was a "thicker" awareness of the threshold, a broader embodied and extended sensory-perceptual-experiential space inhabited by clients.

Learning about and engaging with clients' thresholds in order to manage the "balance" and find the right point of equilibrium required much affective energy and a range of strategies. During each session, one had to have what Paul referred to as a range of "escalating inputs" planned and made easily available. Practitioners at Pegasus would begin by playing games with the children in the playroom, introducing the horses into sessions incredibly slowly. Similarly, at Epona, some clients might begin by walking around the woods, using the sensory room, or simply spending time with the horse before building up to riding.

Attuning to the "Bandwidth"

Paul's descriptive use of "bandwidth" intimates an IT model of the person and a relatedly mechanistic process. However, my experiences of taking part in sessions with Chrissie over the months as she worked with clients intimated a less mechanistic understanding, as I will detail below. I learned from Chrissie that developing a sensitivity to what Paul somewhat reductively described as a client's "bandwidth", was a deeply embodied process and one that took time. Practitioners spent weeks getting know each child or adult in a process of learning with the body, working to develop a sensitivity with which to attune to clients' thresholds. This acquainting and attunement would begin during the first session as detailed above, and often came in fits and starts. Life at home often meant missed sessions for family events. The children's' condition

meant frequent appointments with staff at school, with the paediatrician, speech and language therapist or occupational therapist and days off sick. Some were struck with stomach upsets that left them uncomfortable in the saddle, crying. Maintaining a calm, receptive state on low days was difficult, and took all of Chrissie's experience and understanding. This difficulty became especially clear during a session with Frankie on a drizzly spring day in mid-March.

Frankie arrived and seemed less relaxed than usual. He did not smile, but instead wrapped his arms around his mother's shoulders as she held him on her hip. Bilal's eyes were red, and Leena looked strained, the colour drained from her face. The usual loving exchange between Bilal and his son as he passed Frankie to Chrissie in the saddle, did not happen that week. We made our way outside. Unusually, Leena joined Bilal as he made his way back to the car, leaving Chrissie, Frankie, Sylvan and I to go to the woods. I walked alongside Chrissie, Frankie and Sylvan as we moved up the slope, and along past the playpark to the woods. Frankie's sounds were less soft and gentle on this day. He made sharp, loud noises, sporadically as we walked. "I'll try a bit of trot, Ros. Maybe that will soothe him a bit". After a few paces, Frankie settled a little. Sensing that he was not feeling great, Chrissie kept the energy of the session low. Walking mostly, making transitions, but only from halt to walk and back again.

Chrissie let Sylvan stretch his neck down to graze. As we stopped, Frankie stared at the water and started to grasp at the horse's mane, reins and saddle with his hand. He started to stroke the wet fur, running his fingers along the part of mane by the saddle. He looked at his hand after this, as if contemplating the sensation of the oil from the mane on his hands. After taking his yellow drumstick and rubbing it on the hair, he brought it to his nose to smell. He repeated this a few times. His concentration left him, and he returned to being upset. He looked uncomfortable, folding his body, collapsing around the waist, drawing his body in and making a squealing noise. Chrissie responded by gathering the reins and Sylvan's head and walking forward. Taking a step up, decided to provide the sensory input she felt might soothe him. "Shall we go a little bit faster Frankie?" she asked. They trotted, and Frankie scooped again in the saddle and shouted. Chrissie was still getting to know Frankie, and without Leena there to help interpret, she seemed unsure whether to keep going.

For Chrissie, maintaining a trusting relationship with Frankie was paramount to his having a positive experience, and ultimately, to the success of the intervention. "We should maybe head back to where Leena and Bilal are. How are we doing for time, what's the time?". I looked at my phone and we were 15 minutes in to the session. We walked forward and quickly took the turn back to the arena. When we arrived back into the arena Chrissie explained to Bilal and Leena that

Frankie seemed unsettled today, that he was doubling over. "Has he maybe got a sore tummy today?" Chrissie asked. "Yeah, he gets that a lot." His father confirmed. Bilal and Leena told us that they wouldn't return to the centre for a few weeks. We later heard from Saffy that Leena's brother had died, and the family had returned to Iran for the funeral.

I asked Chrissie what qualified her differentiation between a child showing signs of discomfort because of the slight pressure they were under, or because of fear, or feeling unwell or stressed at home or school: "how do you work out when to stop, and when to keep gently pushing to keep the session going?"

> Sometimes you get the initial reaction of 'oh my God, what's that' [from the child]. So, you do have to be careful […] As long as you're listening to what the child's communicating, you know. If they really don't like it, you just have to make it stop. And say well ok that's fine, we don't have to do that. Having said that it's a really fine balance because today, initially Frankie did say 'hang on, wait a minute, what's this?' And if I'd honoured that, then he would have been straight off and that would have been it. But I was fairly sure that with him, that once I'd got him on and got moving, that it would have been OK. But it's really instinctive. You have to just judge how much, you know, to know when it's real [fear] or when it's just unfamiliarity. Not that you should necessarily always ignore that. [You have to work out if] if it's just them saying, "oh, I don't know what this is", as compared to them saying, "oh, I really don't like this".

Pushing the child was seen as key to helping them progress towards communication, as long as one worked within the "bandwidth". "As long as we can get them to the right place first" Chrissie told me and press the child "in a way where they are not going to lose trust in us. It's a fine balancing act."

As sessions continued I saw, felt and heard Chrissie building her knowledge of Frankie's thresholds – alongside his digestive sensitivities and situation within a grieving household. Over the next few sessions after having started to build an awareness of his sensory profile by remembering his "sensory seeking" behaviours, she balanced novelty with the familiar, gently expanding Frankie's experience of the centre. More trotting, a little bit of canter, to see how he responded. She tried new parts of the woods for their sensorial qualities. The crows' nests at the top of the woodland loop, the leaves which fell in their thickest crunching layers around the bottom of the trail, or the stream that very usefully trickled over a shallow bend of pebbles on the outside edge of the path half way around the trail. The stream here provided more than auditory "sensory input" at this point. Placed as it was at the edge of the woods, if the sun was out, light would bounce and play on the surface of the water, reflecting up to the child's face. Frankie clearly enjoyed stopping there, and so the triad would often spend time there, just looking at and listening to the water. She continued developing this model of Frankie's world by asking Bilal and Leena questions in the moments in between sessions whenever she had the opportunity. If he squirmed

a little in the saddle one week, she would inquire about how he had been feeling over the last few days. "Does he have any food allergies?". "Does he eat well?". "How is he getting on with his new teaching assistant [TA]?". Slowly, Chrissie built up a textured working knowledge of Frankie's embodied engagement with his environment.

"Tuning In": Listening and Speaking-with the Body

When I returned to Epona on a cold foggy morning after a fieldwork trip elsewhere, Chrissie and Frankie had had four more sessions together. I immediately noticed a difference as I held Sylvan in the mounting block. Frankie was more relaxed and comfortable on the horse. He smiled as Bilal lifted him into the saddle and encouraged him, "Ready? Steady? Go!" He responded by trying to copy his father's last sound. "Ohh!". They repeated this heartening exchange three times. "OK. Let's head out to the woods" Chrissie joined in. "Haaayyy" Frankie responded, excitedly, and I unclipped the lead rope. Chrissie, Frankie, and Sylvan made a very stable team now. I took the opportunity to check in with Bilal before we headed off around the woods without him. "I think he's [Frankie] looking forward to coming now, which is good", he told me. I noticed that Frankie had a new plastic toy in his hand to accompany the others, and that the blue one was no longer there. "He lost it" Leena told me, frowning. Having already discussed the difficulty she had with replacing these toys, I sympathized. Frankie was very particular about them especially if they did not feel, smell or look the same as the ones he was used to. In his hand now were a large red plastic M&M man, his usual yellow drumstick with the large ball on the end and a pink peppa pig toy. "He only puts them down when he goes to sleep at night. He gives them to me to look after" Leena told me.

Frankie was clearly very comfortable up in the saddle now. He laughed and smiled and seemed delighted to be in there. We walked around a few loops of the woods and they had some short, gentle trots. Frankie smiled, giggled and bounced in the saddle excitedly as they went. Chrissie then slowed the session down to walking again. This was part of the pattern of the sessions, which started slowly and sensitively for roughly ten minutes, to see how the child was feeling that day, then built up with some faster work for the middle portion, before relaxing down again for the last 10 minutes or so. I could see Frankie relaxing back in the saddle as the pace slowed. "He looks very sleepy" I said to Leena. "Last week he was leaning right onto her like this" she told me, leaning into my side to demonstrate. "He fell asleep up there" she told me, looking adoringly at him and then me, communicating how encouraging she found this.

'Hanging Out the Side' (Malcolm 2016)

From the image above, you can just see Frankie's arm to the left below Chrissie's. He's still managing to hold on to his precious toys (his yellow drumstick is just visible) despite being almost asleep.

We stopped alongside the most appealing section of the stream. On the other side, the farmer's fields stretched off into the mist, linking the centre to the ten miles or so of agricultural blocks of land, punctuated by thick, bramble hedging, between the centre and the 'wilderness' of the range of hills. The top of the hills was just visible under the thick rolling fog that nestled at their base. Leena and I stood at Sylvan's quarters, quietly waiting for Chrissie's next move. After a while, Chrissie asked for a response from Frankie, "Shall we walk on? Shall we walk on?". He gave her no response, gazing out instead over the water and up to the hills. Chrissie turned in the saddle to Leena and me as we stood behind Sylvan on the narrow path. She smiled and told us, "I think I've stopped somewhere with too interesting a view". This was not something Frankie would do at home Leena told me, "because it is not such a relaxing environment. He has noises, more distractions. Here, he is very calm". Frankie had become attuned to his weekly sessions in the saddle, his sensitivity to the new forms of input decreasing with each week and allowing him to relax and remain calm throughout.

During the following session, I walked alongside Leena as we chatted. It was 9am, and the sun had not yet gained the strength to burn away the dewy mist of the morning. Frankie was clasping his three plastic toys; a pink Peppa Pig, a red M&Ms man, and a yellow drumstick. He was wearing his blue hooded jacket, thickly padded with down. Since the mornings started to cool, he would wear his hood up over his hat and buttoned around his head. Frankie did not wear a helmet,

uncomfortable with the feeling of it on his head, and throughout the summer always wore his blue hat with thick, soft shearling ear flaps tied tight around his head. Leena told me this was to help him because he was "very sensitive to temperature". On the request of his parents Frankie had begun attending for two sessions a week. This autumn term, he also began attending school five, rather than only three mornings a week, something Leena had been pushing the school to agree to for months and was very pleased about. Frankie attended a mainstream school despite Leena feeling some pressure from them to instead enrol him in the local special educational needs school. This preference for mainstream schooling was common for parents that I met but was not always seen as the best arrangement by the teachers.

For the last few Tuesdays he had been drowsier than on Thursdays due to the early rise he had to make to get here for the session before school. He had been struggling with this a little and was clearly tired by the transition back to school after the long summer, coupled with attending for increased hours. On this day he sat quietly, looking out through the trees as Chrissie waited for a signal that he'd like to move off again. His normal babble and chatter stopped in these moments. On Tuesdays, he was more prone to this behaviour. He looked very peaceful and calm, as if he was enjoying taking in the view and I wondered if he enjoyed the contrast in light; the dark of the horizontal trees against the bright white of the open fields beyond. Frankie did not appear in these moments to be in a state of what one might call 'reverie'. He was very much inhabiting this space. Zoning out from us, I suppose, but not from his world entirely, a more accurate description being that he was more - rather than less - fully inhabiting his being in world – without the distractions of the back and forth of social niceties like polite chatter.

Instead it felt like he was 'zoning in' to the cacophony of birds in the canopy of trees, the sound and sight of the stream, trickling over stones and flickering in the light. These were the things he looked at and listened to. This was a very different thing to daydreaming and being lost in one's thoughts as 'mentalisations', isolated from the world one inhabits. This is an example of what Erin Manning has called 'autistic perception' (2013), a deeply embodied, extended mind enacted through direct perception of the human and physical environment (Gallagher 2008, Slaby and Gallagher 2014, Newen, De Bruin and Gallagher 2018). Prompting him into action a little, Chrissie said very gently "Shall we walk on? … Shall we walk on Frankie?". Chrissie waited for Frankie as they sat looking out through the trees. He did not respond for a second or two, did not turn around to acknowledge her. Frankie brought himself around slowly, before rocking his body back and forth in the saddle, gesturing to her that he was ready to walk on, in response.

An important note to make here is that whilst Leena tended to stay very quiet, walking at the back of the triad of Chrissie, her son and the horse, others did not blend into the atmosphere Chrissie tried to create. Chrissie often discussed the discontent she felt with the continual chatter of many of the carers and parents during sessions with their children. For her, she was in a difficult position between offering the children these calm spaces of relaxation and contemplation, time to be in the moment and inhabit the world in their own particular ways without judgement on the one hand. On the other she was tasked with offering a listening ear for parents who often had very few outlets to express their concerns. Both were considered to have a beneficial effect for the client through offering both child *and* parent/carer the chance to decompress and destress. Part of her job was to gently impress on parents the importance of acknowledging and helping to facilitate these quiet spaces of sensory exploration.

Over the last few sessions, Chrissie had been bringing Sylvan to a stop, and asking Frankie the question, "shall we walk on?". Whilst I was away, Frankie had begun to respond directly, rocking his body in the saddle. Chrissie interpreted this as him asking to move on. When Frankie rocked his body, she asked Sylvan with a very gentle squeeze of her legs, to walk forward. Chrissie made sure to respond to this movement as quickly as she could to make sure he felt a clear connection between his own rocking movement and Sylvan's response. Since establishing this system and reinforcing it Frankie's rocking had become more and more subtle, shifting from a chaotic and uncoordinated splaying at the torso out and in from the saddle, to a rhythmic forwards and backwards movement along the plane of Sylvan's body and neck.

This is a form of communication that Chrissie, Frankie, and Sylvan had been developing over the seven months since Frankie started sessions in the last week of February. Chrissie had, with the help of Leena, become attuned to Frankie's own special language of gestures, vocalisations, and stimming behaviours, and due to her position in the saddle, the slightest of movements of his body. Indeed, they built their own system of communication particular to these 'back-riding' sessions. Frankie learned that certain movements of his body resulted in certain movements from Sylvan, and relatedly himself, as he sat in the saddle. Chrissie now acted as Frankie's translator, taking his cues and turning them into requests for Sylvan to move on or stop or speed up. She referred to this as learning to "tune in" to Frankie. Over the weeks, Frankie's own response to the trotting became subtler. By mid-June, he no longer projected himself high out of the sheepskin when trotting, but instead bumped along softly, tuning in to the rhythm of Sylvan's steps. He was altogether calmer and more controlled in his movements.

The multisensory engagement of therapeutic touch has been explored in the context of what has been termed 'bodywork' such as massage or reiki (Barcan 2011) or in the context of the medical skills of pulse taking (Daniel 1984, Hsu 2005). In her article on the learning of percussion by medical students in the Netherlands and Australia, Anna Harris (2016) discusses students' development of the 'listening-touch' necessary to tap parts of the body to sense the density of the underlying structures, such as lungs and abdomens. Harris usefully points to Merleau-Ponty (1968) to circumvent the oft-elided relevance of *self*-perception in the context of such multisensory enskillment, whereby the body becomes a diagnostic gauge. Merleau-Ponty and those inspired by his work also aid us in exploring the body not as 'having senses', but as being sensible – that is embodied with a sense organ of entwined vision and touch whereby one's hands for example "become one sole organ of experience" (1968, 141).

In the context here, I suggest that in learning to "tune-in" practitioners not only engaged in the multisensory disposition of 'listening-touch' but also learned, by reflecting on their own self-perception, to speak-with the body through touch. Below I detail the ways that this skill of "tuning-in", that is, both listening-with, and speaking-with the body were central to practitioners perceptions of therapeutic efficacy, in allowing practitioners to "honour" the communications of clients, and thus develop relations of trust. Chrissie, Frankie and Sylvan were engaging in a delicate and gradual extension of the point of balanced pressure between "sensory input" and "overload", calmness and pressure, similarity and novelty. Over the sessions, the sensitivity and reactivity of the client would hopefully be reduced and the threshold between comfort and upset could inch closer to verbal communication.

At Pegasus, Paul emphasised this progress across the sessions. "And if you look for a pattern, you might see clients go longer and longer each week before they'll reach that state [of overload]". As explored above, Chrissie built up the pressure slowly and pressed Frankie gently, and only at points where she could feel that he was in a calm "receptive" state, inhabiting a space comfortably within his "sensory bandwidth". By working in this mode of resonance, Chrissie had encouraged Frankie to use communicative words - "walk on" – to self-advocate. The need to respond quickly and effectively whenever a client made such a move towards any form of communication, and especially non-echolailic language, was paramount for Chrissie. This fast response had been integral in responding to Frankie's initial rocking in the saddle, before he had begun using any language. During our usual feedback after one of Frankie's sessions between developing the rocking communication and prior to his use of language, Chrissie told me;

> I have to honour that because what I'm seeking is communication. And he's using his body to communicate to me that he wants to trot. Even though it's not verbal. I mean really all I'm seeking from him is communication and if I don't honour his non-verbal

> communication then he's not going to use language. So, I have to honour him, you know. Whenever he does that I have to respond to what he's asking.

For Chrissie, honouring communication the second it happened formed a central aspect of the attunement she had been building with her clients, and to the efficacy of the sessions. It was an integral part of reaching the sought-after resonance between practitioner, horse, and client. Chrissie frequently reinforced the import of honouring these communications at all costs. For a child with autism, in Chrissie's account, any form of communication should be encouraged. If the communication was missed by the practitioner, there was a very real fear that it may not be offered again. That you had missed your chance.

> I've kind of learned the hard way. That if you don't respond straight away, you don't get it again. And you know you sometimes work for weeks and weeks and weeks and sometimes months and months and months for that communication and then you get if offered. And bizarrely a lot of kids with autism, when they offer you true communication instead of echolalia, it's often much quieter. It's often really whispered. And if you miss it, they might not offer that again for months and you might have to go back to the beginning. So, you can go through months of work and miss it in a split second.

As Chrissie mentioned, she had learned this the hard way. The guilt associated with potentially having missed a client's first attempts to use language weighed heavily on her and permeated her pained expression as we spoke. Finding "the right pressure" and "honouring communication" could have life-changing effects for clients with autism.

"Tuning Out" and Pushing Onwards

In the next few sessions Chrissie increased her requests to Frankie to respond to her questions. This began again by making transitions through walk and stop. We were in the bottom section of the woods where last year's decomposed autumn leaves still squelched underfoot. Frankie was less ensconced in this space and stayed still for only a matter of moments before he rocked his body to ask to move on and keep walking. He rocked slightly, and then more emphatically. This time, however, Chrissie "tuned out", and held off from asking Sylvan to walk forward. During this session, Chrissie made a shift from asking Sylvan to move forward the second Frankie rocked, to holding off for a few moments, and repeating the words "walk on", to Frankie. Her aim being to encourage Frankie to shift from giving a bodily signal, to a verbal one. And importantly, not sounds, but the words, "walk on" or "faster". She increased these intervals each time, managing a fine balance between frustrating and upsetting him, and encouraging the speaking of words that she established he had the use of. By keeping her reins tight, Chrissie delayed responding to Frankie's request to Sylvan to walk on. Frankie rocked back and forth in a more exaggerated

fashion, the movement amplified with each second Chrissie failed to respond to the cue he had become comfortable in using.

The following week we walked around the farmer's fields rather than in the woods. Leena and I had been chatting about how she thought the sessions were affecting Frankie, and about his experience of school. As we chatted, Chrissie, Frankie and Sylvan were making transitions through walk and trot and had edged ahead. They were very secure in the saddle now, and no longer need a sidewalker for safety. Chrissie brought Sylvan to a halt and Leena and I caught up to them.

> Chrissie: We've had some excellent cues. As we've been walking along, even though he's been talking quite a lot, he's had quiet moments. And in those quiet moments he's said 'faster'. Maybe three times! And it sounds like he's saying 'walk' as well. So, I'm going with it and doing what he's saying. I got it wrong, and that was when his volume stepped up a bit. He turned around and looked when we were along that straight part of the field. And I think that was because he'd said it, and I'd misheard it and done the wrong thing. And he let me know that, "actually, I was not just babbling, I was giving you a command, and you got it wrong!"
> Roslyn: Is that new?
> Chrissie: Yeah, that was awesome!

After the session we took Sylvan back to the stable as usual, and Chrissie worked through how she felt the session went.

> He seemed more engaged [...] When he said it once, and I did not do it [go faster], because I was not sure if I'd heard him right, he turned around, and gave me a proper look. He made a little grunting noise and really went like that [scoops hips and body] as if to say, 'come on, I said faster, why aren't we doing that?'.

From now on, every time Frankie made a sound resembling a "walk on" or "faster" or "trot" in sessions, Chrissie instantly asked Sylvan to move forward, and praised Frankie.

She felt that the trio's communication had developed significantly over the weeks and months. First for Chrissie to establish was the trust, that he was safe up there with her in the saddle. Chrissie then spent weeks working out what Frankie's movements meant. She "tuned in" carefully with her body to the way his moved, and to the changes in sounds he made. And by doing so, she tried her best to achieve what she understood to be an "honouring" of his requests and communications. When she had done things right and according to his wishes (stop, go, speed up, slow down, turn around etc.); he responded with smiles, soft babbles, giggles. And also, when she hadn't; sharp, loud cries, screams, jagged body movements, squirming. This development in communication had thus taken another step, towards language production. In "tuning out" to encourage Frankie to use words and then trying to respond instantly to reinforce her appreciation, Chrissie's attention had been firmly focused on Frankie, to the exclusion of Sylvan. It became clear to her after a session a few weeks later that Chrissie had not yet taken account of his role in

the process of communication, and his own learning that needed to take place to facilitate this shift.

We had again come to a halt and waited for Frankie to respond. Whilst waiting for the verbal cue, this learning of Sylvan's became very apparent. Frankie rocked back and forth to tell Chrissie to ask Sylvan to walk on, and Chrissie was having real trouble holding Sylvan back. It occurred to Chrissie in that moment, that over these weeks [before now having to wait for Frankie's verbal cue "walk on"] Sylvan had effectively, as she put it later, "cut her out" of the communication during this phase of the process.

> The problem that I'm having now is that Sylvan is interpreting Frankie's signals very well. So, Sylvan is cutting me out of the equation. Which is something that quite often happens. Once he gets used to a rider, he begins to ignore me. So, he's sort of listening to Frankie more than me now. So as soon as Frankie tilts his body forward, Sylvan just naturally starts walking. Frankie is sort of in charge. Which is good and bad, because it'll be brilliant for teaching him that he's in control and he's able to get what he wants and go where he wants to go. But in terms of communicating, in terms of what I am trying to achieve with the vocal cues, it's sort of difficult. I have to try and manipulate things, shall we say.

Sylvan had been involved in every move, every feeling and had learned the system along with Frankie and Chrissie. Chrissie felt that Sylvan could "listen" to Frankie, just as she could. And so, when Frankie leaned forward and rocked, and Chrissie used her leg to encourage Sylvan forward, he knew to go faster. He was primed by Frankie for Chrissie's command. On receiving confirmation from Chrissie that this was indeed what she wanted, he would move off quickly. In effect, receiving the cue from Frankie may have been improving/speeding up the communication between Chrissie and Sylvan, making the responses to Frankie's requests faster, and therefore more effective in reinforcing the behaviours she desired Frankie to display. As she trained Frankie to use the words "walk on" before moving off, Chrissie would also be training Sylvan to wait for these words. In order to give Frankie the instant positive reinforcement needed to make the therapy effective, Sylvan would now have to learn to wait.

This process is well understood as entering - or "tuning" - into and then "out" from a relation with the horse. Haraway's notion of the hybrid as a totalizing form of being-with (1993) does not encapsulate these relations between horses, clients and practitioners which were partial and disjointed as often as they were fluid and effective and involved so many other factors of the environment in their enactment. The following section explores the multiplicities involved in orchestrating these moments of attunement.

"It's All About Timing"

During a long interview over the summer break, I asked Chrissie to give me more detail about how these moments of "tuning in" and balance were achieved, and how she experienced them, with the aim of exploring her own descriptive language for doing so. Chrissie found this highly embodied experience hard to translate into words.

> Chrissie: I think a lot of the balance is between the instructor and the horse… It's hard to quantify.
> Roslyn: How do you describe that interaction that's going on?
> Chrissie: Yeah [laughs nervously] I don't, I don't. It's really hard. I generally say, come along and have a look. Because it's really difficult to describe. Or I show people a video clip. It's something that is going on between the child and the horse. Where the child is forming a relationship with the horse. And they are unlocking something in each other, and learning to trust each other, through some means.
> Roslyn: And how does the practitioner do that?
> Chrissie: Whether it's riding or back riding, or ground work, or just hanging out together. You need someone that's aware of exactly what's going on. Monitoring the horses' reactions. Managing mum. Trying to make sure the child is pushed a little bit, but not stressed. Distracted at the right time, pushed at the right time. Ready, right there at the right time. To get them on at the right time [to avoid a reaction]. It's about balancing between timing, and sensitivity and pressure and other people [such as parents/volunteers] and the horse and the environment. It's like the old-fashioned weighing scales with the little tiny weights, you know the ones? Except instead of two trays, you've got at least three, probably more like four or five. And all the time you're moving tiny weights from one to another, and just trying to keep it all level and balanced. And so that's how it goes. There's no constant.
> Roslyn: How do you manage it all?
> Chrissie: You've got to have one foot in and one foot out. It's really challenging... that's why I'm always asking people what the time is. Because I completely lose track of the time. You have to submerge yourself for a while, and go with it for a while, and then pop up and see what's going on. And then go under for another while. It sounds complex, but actually, it becomes bizarrely natural after a while. And I think if you're given to this kind of work it's just intuitive for you.

Chrissie tells me that the "balance" therefore not only lies between the instructor and horse, but also in the trusting relationship between the horse and client. Chrissie uses the imagery of a set of scales, with the practitioner at the centre, acting to balance the multiple aspects of the intervention. For Chrissie striking that "balance" between these aspects was "all about timing". And this referred not only to well-sensed and well-timed interventions and gentle pressures from her, but also "balancing" between "being-in-the-moment" with maintaining focus on both the successes and failures of previous sessions, and the future goals of the sessions. The notion of "balance" was one of a number of material metaphors that I found central my interlocutors' understandings of how AM worked. Below, I focus on the importance of time.

Working the scales was assumed to effectively lead to the progress of the child towards communication – and ultimately and importantly for Chrissie and the other practitioners, self-advocacy. All aspects of this delicate attunement were understood to centre on the right timing. In her view Chrissie was required to submerge herself in the sensorial body to body engagement of the intervention whilst periodically "coming up for air" to negotiate the other aspects hanging in the "balance". Engaging with multiple timescapes was central to managing these heterogeneous aspects. Timing was key. Building on the effect of the repetitive rhythm of horseback movement was the repetitive rhythm of weekly sessions. This allowed her to "tune in" to "find the right pressure", practices she felt were required to encourage the client almost, but not quite to the edges of her or his comfort zone. It was hoped that the length of time a client could deal with "input" before becoming "overloaded" would be extended with each week's session. Further evidencing the import of time was Chrissie's fear that if she failed to respond to a clients' communication within seconds, it might never happen again. Time was imperative to efficacy.

Rhythm is increasingly referred to as a standard periodicity, a set frequency demarcating punctuations in time. "The perception of rhythm usually refers to the duration of an expectation and its fulfilment of a pattern within an ordered recurrent movement or a series of events" (You 1994, 362). However, as You has suggested duration as *lived time* should form the basis of our understanding of rhythm, rather than the mechanical tick-tock of modern clock time. In the context of my field sites rhythm is better understood not as an abstract concept through which to think about standard time, but rather a category of embodied human experience. Here, it helps us to link between the indeterminate relations of activity and repose, movement and stillness bound up in my interlocutors' constructions of therapeutic efficacy thus far.

Matthew Wolf-Meyer (2014) encourages us to think through the temporality of medical treatments, suggesting a spatiotemporal differentiation between cures, remedies, and therapies. Cures offer one-time fixes, and remedies temporary situational relief of symptoms. Therapies, such as the equine therapy in question here, offer temporary relief of symptoms with the potential for a non-situational, permanent fix or return to normalcy in the future. Medical interventions are traditionally predicated on returning the patient to a pre-pathological state (Canguilhem 1966), a disciplinary process acting to define the normal. The current shift to personalized medicine and the problematisation of the universal body by the neurodiversity movement (and the disability rights movement underscoring it), have weakened the foundations of normalcy in medicine. Compounding this is the recent shift in the place of normalcy in medicine owing to the proliferation of chronic rather than acute conditions requiring on-going surveillance, and the

increasing diagnoses of comorbid conditions which impede any straight forward return to a pre-pathological state of normalcy.

Normalcy is no longer situated in a return to a prior state therefore, but rather exists as a projection into the future. Normalcy is on the move, an ever-elusive state. Therapists and clinicians attempt to produce patients who are instead normal-in-advance, prepared for future risks, including co-morbidity (Wolf-Meyer 2014). This is certainly the case in the context of equine therapy whereby practitioners aimed to sensitively attune with clients in order to gently pressure them towards better social functioning in the future and foster the ability to fend off the mental health issues faced by many autistic people as they age. "The cure serves as a rupture between past and future, and its delivery becomes a historical marker. In contrast, remedies and therapies are mundane, separated by the structure of their rhythms" (Wolf-Meyer 2014, 146). However, it is pressing to note that Wolf-Meyer's proposition that it is remedies that focus on the whole person with therapies focusing on discrete aspects of the body such as the brain, is not appropriate in the context of equine therapy. For my interlocutors, as intimated thus far, it is the whole body and its worldly inhabitation that is considered the site of autism, and as such that requires treatment.

On-going involvement has become the hallmark of therapy culture, which is focused on lifelong maintenance and is enacted through the development of a repetitive therapeutic rhythm. As explored in this chapter, I argue that the repetitive rhythm linking one session with the next also held an expectation for the future, for Frankie to develop new ways of relating with Chrissie, Sylvan and ultimately his family as time went on. This expectation to produce normal-in-advance, illustrates the way in which therapeutic rhythmicity links past, present and future in the equine therapy context. These multiple temporalities were always being managed by Chrissie as she carried out her sessions, requiring her to become submerged, before emerging again to take perspective from past experiences and future expectations.

This chapter's focus on rhythm links the moments of stillness in motion enacted by rhythmic horseback movements through space as described in the chapter on sensory issues, to the repetitive therapeutic rhythm linking weekly sessions which aimed to provide anchoring states of calm. As Langer has suggested, "everything that prepares a future creates rhythm; everything that begets or intensifies expectation, including the expectation of sheer continuity, prepares the future" (Langer 1953, 129). This chapter then, by summarising the themes of the prior chapters and detailing the import of temporality, sets the scene for the proceeding chapters. These explore how the repetitive rhythm of therapy sessions project towards a future state of normalcy in clients. This rhythm between past, present and future, constitutes a third layer of rhythm that emerged

from the data, of projecting towards the expectation of achieving the therapeutic goals in the future bound up in the practice of therapy.

In conclusion, I argue that the mutual reorientation of client (toward normative communication), practitioner (toward communication specific to the client) and the horse (working to attune to the communications of both client and practitioner) can usefully be situated within multispecies ethnographic scholarship and emphases on forms of mutuality (Haraway 2003, 2006, 2008, Maurstad et al. 2013). However, in the context of my research, this process was contextualised in terms of the following aspects. In the preceding descriptions, through a process of threshold management, "pressure" was applied to Frankie throughout the intervention. This shifted from a body to body engagement between he, Chrissie and Sylvan in the "deep pressure" of "sensory work" [as outlined in the previous chapter], to one situated in a broader engagement of "tuning in" to his "bandwidth" and "finding the right pressure" between "sensory input" and "sensory overload". Chrissie believed she could gently shift the transformative tipping point of the threshold to allow Frankie to withstand increasing frustrations.

When the calm, relaxed disposition understood to be created by initial "sensory work" was perceived to have been reached, and when Chrissie had managed to sensitively "find the right balance" between "input" and "overload" for Frankie, his communication could, with prompting and moments of "tuning out", become language based. She could gently move him in his space of "sensory integration" that I refer to as stillness in motion, across a transformative threshold towards social integration, and synchrony with social time. This could only happen if throughout the whole process Chrissie had successfully honoured Frankie's non-verbal communication at all times. Otherwise, the relationship of trust between her and Frankie would not develop strongly enough for him to come forward and speak.

Chrissie evoked this intuiting of a "balance" between "pressure" and release with the image of a set of scales with multiple aspects with the practitioner at the centre. Working the scales effectively led to the progress of the child towards communication – and ultimately and importantly for Chrissie and the other practitioners, self-advocacy – without causing too much upset or working in opposition to the character of the child and his condition. These parts had to be held in balanced proportion for a harmonious session to be orchestrated. This produced a kinetic melody and allowed therapeutic efficacy – as defined by practitioners – to be produced. All aspects of this delicate attunement centred on the right timing. Chrissie was required to submerge herself in the sensorial body to body engagement of the intervention, entirely "tuned in" to, and resonating with

Frankie's verbal and non-verbal communications, whilst periodically "coming up for air" to negotiate the other aspects hanging in the balance.

This formed a mutual reorientation and emergence via bodily engagement and communication, a process that Haraway and others (Haraway 2003, 2006, 2008, Maurstad et al. 2013, Despret 2004, 2013) respectively refer to as 'becoming-with' or 'correspondence'. It is important to note here that Haraway's work is most often operationalised in human animal studies and within anthropology, multispecies ethnography (Kirksey & Helmreich 2010). Within the context of this research project, focusing on the multispecies engagement of humans and horses, the approach is incredibly useful. I argue further, that in a context where my human interlocutors are positioned precariously on the edges of how the human is constituted through having limited or no use of normative forms of communication and sociality such approaches are invaluable for giving conceptual space for a diversity of modes of being in the world. However, here I propose a different lexicon taking this conceptual approach forward in a direction more suited to my data and the relations that emerged between my interlocutors.

Responding to my interlocutors' multidimensional understandings of efficacy I focus on the terms 'resonance' and 'attunement' rather than the - specifically multispecies – terms of 'correspondence' and 'becoming-with'. In so doing I open space to include the relationality of all actors in equal accounts. That is, not only the relationality of humans and specific therapeutic horses, but also that shared between my human interlocutors. Haraway's 'becoming-with' does give space for flow and its interruption (Haraway 2006, 111). As she explains, "an embodied communication is more like a dance than a word: the flow of entangled, meaningful bodies in time - whether jerky and nervous or flaming and flowing, whether both partners move in harmony or are painfully out of synch or something else altogether-is communication about relationship".

Invoking musical metaphors, the terms I suggest also allow space for being in and *out* of "tune", in and out of sync and in and out of time, with one another. The terms proposed allow for resonating in many dimensions zooming in to the microscopic machinations of the body, and out to intersubjective communicative relations; moving in rhythm with the horse and practitioner in moments of "balance" and "the right pressure" or outside it to moments of sociality more broadly. In keeping with the frame of musical flows I also refer to rhythm as a category of human experience of lived duration. This acknowledges the connections between seemingly indeterminate relations of movement and repose, stillness and motion that re-emerge throughout the data and will be built on in the following sections of the thesis. These are firstly a stillness

inculcated by a rhythmic movement on horseback as detailed in Chapter 2, and secondly the repetitive therapeutic rhythm of weekly sessions as detailed here.

As established, therapies are particularly closely related to the future in their promise of a potential non-situational fix (Wolf-Meyer 2016) and rhythm is a future-oriented-temporal order (Langer 1953, You 1994). The balancing of "being in the moment" with concerns regarding the future aims of the therapy has been intimated here by Chrissie in her explanations of having to "step in" and "out" of "the moment". This signals the importance of the multiple, simultaneous temporalities at play in the production of efficacy and introduces the analytic for the following chapters of the thesis. The chapters to come focus on a third rhythm linking movement in stillness where attempts towards the production of normalcy for the future are explored in more depth. The next chapter continues to explore the notions of "balancing" between "pressure" and its release in attempts to facilitate "integration" introduced here. It does so in relation to what I call 'care in the moment' and 'care in the future'.

CHAPTER 4 - "Horses Taught Me How to Human": Pressure and Release and the Orchestrations of Empathy and Intent in Therapeutic and Training Practices.

Chrissie and I were leading Arthur, the big, thick set grey Highland horse around the arena as we waited for Evangeline to arrive with her mum for her AM session. Evangeline was a young girl of eight with piercing blue eyes and melodic singing voice who had been riding with Chrissie since she was four. She was brought to Epona by her dedicated mother. As I got to know her and her mother it became clear that every few months Evangeline would begin to act differently. After riding confidently on her sheepskin pad indoors and out in the woods for months, she would suddenly be hesitant and concerned about moving away from the walls of the indoor arena when riding. Chrissie would patiently work with these cyclical shifts and explained to me what she thought was going on.

She told me, "she has autism, but also a chromosome deletion disorder, which gives her these huge growth spurts." Evangeline looked more like a ten or eleven-year-old than an eight-year-old. Her mum told us that she had been falling over in the garden a lot and was very discoordinated. Chrissie suggested that it was because her vestibular system hadn't caught up with the growth spurt she had been through. "I would have thought the inner ear was not the site of the trouble, but the communication between it and the brain feedback mechanism" she told me. It had taken from early April, when the problem had peaked, to the first week in June to get Evangeline to go back outside again. This was an elaborate process of balancing following Evangeline's lead with applying minute increments of pressure and getting to the edge of Evangeline's comfort before releasing again.

In attempts to extend Evangeline's movement through the arena, Chrissie introduced an oversize bubble wand that she and Evangeline passed back and forth as they moved around. Each time it was Chrissie's turn she would direct the bubbles towards the inside of the school. With Evangeline distracted Chrissie would direct the volunteer to circle the horse in towards the middle of the space. This allowed Evangeline to catch the bubbles and for them to pop as they landed on her face and body. This distraction would work until the bubbles went in the wrong direction, or Arthur moved too quickly. Evangeline would shout "too fast" or "walls again" and we would take her back to her sense of security at the perimeter.

As the weeks went by she began to relax, perhaps due to her vestibular system catching up with her new bodily inhabitation following a growth spurt. After four weeks of working with the bubbles Evangeline had gradually permitted the ensemble to move closer to the centre of the arena. After seven weeks, she allowed us to move closer to the exit. The conglomeration of tools

Chrissie was using now also included a set of blue and white crystal healing beads worn around Arthur's neck. The week they appeared on Arthur's neck she told me "I don't really believe in this stuff. But Louis gave me them, and it can't hurt, can it?". This week, Chrissie decided to ask Evangeline's sister to stand by the exit and blow bubbles across the threshold.

Chrissie then placed Evangeline's mother outside the arena, to beckon her outside. The breeze caught the bubbles and carried them over towards the large swing in the playpark where Evangeline had liked to play before entering this period of discoordination and anxiety. At this, Evangeline permitted us to lead Arthur over the threshold of the arena and out into the courtyard. Over the space of this eight weeks from early April to June Chrissie had followed Evangeline's lead, only extending her engagement when permitted, until she was ready to go outside again. This format of taking incremental steps towards the goal of being outside, pushing Evangeline almost to the edge of her threshold yet simultaneously "following" her wishes was understood to have helped her to return to riding outside.

As I brought Arthur to the mounting block for her to climb onto a few weeks later, I noticed Evangeline standing with feet half on, half off the block, rocking back and forth ever so slightly. As Chrissie moved to help her, Evangeline quickly turned around and got on backwards. Finding this hilarious she shouted, "walk on, Arthur!". Chrissie looked unsure, but went with it, and after a wobble Evangeline looked stable enough. For the next few weeks, Evangeline rode backwards, a significant test of her balance. She appeared to be greatly enjoying these experiences, of playing at her edges. It was a relief to see her clearly more comfortable in the world now.

After a few weeks of riding outside again in the woodland trail, Evangeline began to play with the elasticity of control that had been extended to her when she introduced a new game. Walking around the woods during a session in late June, Evangeline had demanded that Chrissie pass her the stick she was casually holding in her hand. Evangeline took the stick, pointed it like a magic wand at Chrissie and shouted "stop!". Chrissie, emboldened by what she had seen in terms of Evangeline's development over the last few weeks, looked at me, and after a few steps, stopped in her tracks. Chrissie was left behind, and Evangeline rode ahead on Arthur with her side-walkers on either side. Evangeline looked delighted.

Now confidently balanced in the saddle, she twisted and turned excitedly to keep her eye on Chrissie. Looking back to check on her in the background, she pointed the wand again; "come back!". Chrissie ran to catch up with us. This granting of control to Evangeline continued for several weeks. She engaged a second, and then third volunteer, developing a more complex game with a number of characters. Chrissie understood this as constituting the early stages of

Evangeline developing self-advocacy. By finding the time and affective energy required for "following the child", Chrissie felt that the sessions had facilitated this shift. Embodying a position of power, a position she did not often have the opportunity to be in, was a productive experience for her.

The above details the significance of the interplay of "pressure" and release in the relations between clients and practitioners enacted by the practices of AM. This extends the previous chapter's focus on the shift from direct bodily pressure applied to clients' bodies - referred to as "deep pressure" - to a behavioural pressure applied to the edges of the clients' "threshold" by practitioners. In Chapters 1 and 2 I showed that practitioners produced what they defined as "the right human environment" for therapy sessions based on what they understood to be the central importance of the sensory idiosyncrasies experienced by autistic people.

Providing such a space produced a related tension between freedom and constraint that was created by practitioners simultaneously allowing clients to inhabit what was seen as their true, wild nature and be free to be "as they are". They simultaneously performed the extensive domesticating practices required to mould 1) clients into communicative people and 2) horses into therapeutic animals, respectively. These negotiations were produced by and productive of the geography and architectural features of each centre, which aimed to provide autistic people with sensorially agreeable spaces in which to relax and receive the benefits of the therapy. This constituted what I have referred to as an environmental niche that enacted autism at my field sites.

This chapter moves on to develop these ideas and explore how the tension between freedom and constraint also played out in therapeutic and care practices within these spaces. This constitutes a shift from the embeddedness of the client in environmental - and thus spatial – aspects, to behavioural aspects of the environment. I will argue that these constituted a behavioural niche coproduced by horses and humans in which a situated autism was enacted. This negotiation was produced through two practices: "following the child" – a central practice of the Atalanta Method (AM), and "free schooling" – a natural horsemanship practice of horse training. As will be shown, my interlocutors situated success - in both methods - in intuiting a fine balance between the application of pressure and its release. Again we see the emergence of this triad of themes: "balance", "pressure" and "integration", so central to my interlocutors' understandings of therapeutic efficacy. I will show that "finding the right balance" and working within the associated thresholds was understood to produce relations of trust.

In order to explore the above I detail conversations held during my visit to the Atalanta Ranch. I will show how an ethic of "the right intent" had to be mobilised for relations of power to be considered 'good' treatment of both the clients and horses. However, as I will discuss, achieving these relations was highly elusive. I explore local formulations of 'good' care and how practitioners relatedly justified their practices. Although this chapter engages with the notions of control and freedom, and pressure and release, I do not presume to resolve whether the practice of equine therapy, and the horse training practices upon which it relies, are good *or* bad. Rather I aim to show how local understandings of "good" and "bad" were constructed through their imbrication with notions of control and freedom. As Mol et al (2010) and Giraud and Hollin (2017) have suggested, there is good and bad in all forms of care.

This complexity will be explored in depth, fleshing out a critical anthropological and thus very specific exploration of care. I will show that practitioners at Epona continually renegotiated relations of freedom and control in attempts to enact what were viewed as less dominating practices of care for their clients and the team of therapeutic horses. I argue that exploring these simultaneities between control and freedom, pressure and release are key to understanding local conceptions of therapeutic efficacy through the provision of what I argue can be understood as 'good enough' care. In an inversion of the original meaning proposed by David Winnicott (1953) in his description of the 'good enough mother' - who gradually and gently allows her child the minor frustrations required to come to the awareness of his or her existence as a *separate* being from the mother-child unit – practitioners gradually allowed their clients the minor frustrations of being encouraged to *connect* with others in more normative ways. 'Bad' care in this context was understood as exemplified by interventions working against autistic practices such as "stimming" and ultimately those which aimed to 'cure', by removing aspects of the condition.

These approaches were contrasted with AM which was devised in direct relation to the sensory and stimming needs of clients.[24] My interlocutors understood that they were working within a context of understanding, support and kindness in the weekly moments of sessions to provide gentle pressure to help their clients learn the skills required to reach a long-term goal of integrating more successfully in society. In Chrissie's words, "anything to get the kids talking". In the context of my field sites then, I argue that what I have referred to as 'good enough care' was enacted in a "balance" between what I term 'care in the moment' and 'care in the future'. This allows me to go on to discuss how learning about the interplay of "pressure" and release through learning how

[24] Examples of these would be chelation (the practice of removing heavy metals from the body by the oral, intravenous or muscular insertion of chelating chemicals), hyperbaric oxygen chambers, or applied behavioural analysis.

to train horses using the method of "free schooling" enacted another, and quite unexpected mode of efficacy.

"Following the Child is our Main Philosophy"

As explored in the previous chapters, by adhering to the initial stages of AM clients were moved into a state of coping by soothing sensory issues and "dealing with cortisol and oxytocin levels". Facilitating and encouraging movement whenever possible was a key aspect of this process. This meant that clients would "be absolutely able to learn". By carefully producing and working on "the right environment" for each child, practitioners could practice "following the child". A child-centred pedagogical approach was fundamental to AM. As Amy put it, "the take-home message is that we need to tailor everything that we are doing to the child's specific interests [...] Following the child is our main philosophy".

This philosophy wove its way through all levels of the method and its engagement with the various sensory preferences of the client. In its simplest iteration, much emphasis was put on involving the child in the most basic of decisions. For example, at Epona, week in and week out at the same point at the entrance to the woodland trail Chrissie would ask her clients "which way?". She would repeat the question until she felt she had received some response approximating a decision. This could, as in the case of Andrew, Henry, Jayden, Evangeline, or Linden, be verbal; "left" or "right". Or it could be a rocking motion in either direction, as was the case with Frankie, or Angharad. The same opportunities were given to clients on rides at Epona, Atalanta and Pegasus.

In addition to the "good sensory triggers" and movement explored in Chapters 1 and 2, "the right environment" also had to be what the team referred to as a "yes environment". The space should be as safe as possible to allow expansive movement throughout, allowing the child to decide where to move to, and to avoid practitioners, parents and others having to say 'no' to the child. Practitioners constituted "the right human environment" aspect of the learning equation posited by the method's designers. To successfully provide the right human environment, practitioners had to be wholly switched on to finding ways of keeping the child safe without interrupting or constraining them wherever possible.

Through working with an understanding of the child's experience of the world and moving with rather than against this they would be able to maintain the flow of connections they had made. Saying 'no' was feared to result in the child "shutting down" emotionally and intellectually.

Instead, significant architectural design (as already established) and advanced preparations alongside the practitioners' use of gentle redirection and distraction tactics were used to avoid having to say 'no'. This was precisely why traditional, non-child-centred school environments - unable to offer such expansive movement and openness to the child's particular needs - were felt to have failed Louis's son Noah and so many other children with autism.

I was told that sessions were as much about providing parents with the understanding and means to make affordances for their child, providing a 'yes' environment at home, as they were about assisting the child to change their behaviour. Louis told me, "we measure success by families not returning to the ranch", meaning that once learned by parents and built into daily practices and the home environment, they could be so effective in helping children they would have no need to return. Parents were thus part of what the method constituted as "the right human environment". Louis often referred to the intervention as "therapy by stealth". Firstly, this was to indicate his unwillingness to refer to AM as "therapy".

He felt that children with autism were continually taken from one therapy to the next and wanted to offer a fun, relaxing space outside of school or the clinic. Secondly, it was to assuage understandably sensitive parents who may have felt that any method encouraging them to learn new ways of engaging with their child, and taking some time to de-stress themselves, was a masked form of parent-blaming (as enshrined in intimations regarding the causative force of refrigerator mothers by Hans Asperger and Bruno Bettelheim during the height of the psychoanalytic period in psychiatry). By making environmental and behavioural affordances that helped establish relations of trust, it would eventually become possible for practitioners, and later parents, to begin to actively mould and encourage the children to use more normative forms of communication.

"Following the child" not only referred to designing sessions to cater for the child's sensorial needs and wishes. Older clients' academic interests were also followed, in the hope that they could be used as an eventual route to employment. These were understood to be developments of, and reflected in, the stimming behaviours and so-called "fixed interests" of clients (APA 2013). Amy gave us the example of a young man who had come to the Atalanta Ranch to emphasise the import and potentially significant consequences of the method. "We have a young adult, and he has been coming for about ten years. When he first came, he was very withdrawn. He would come and sit quietly by himself and not really talk to anyone". The team watched him spend hours fiddling with reels of metal wire, thinking he was "stimming", before noticing that he was making chainmail.

> So, we started to talk to him and asked him to teach us how to do it and after a while, we would start to ask him about different things. And he is now at the stage where he is not just a self-advocate, he is an autism advocate. We pay him to come to trainings and talk to people. But now he doesn't come all that often because he is too busy as an autism consultant. Parents pay him to help them interpret what their children are doing. And that all came from starting with his interests and asking him to teach us about it. So that's what we do with the older kids.

Following "stimming" practices was seen as a key to learning more about the child, their interests, gifts and "inner world".

In so doing, practitioners, parents and teachers could begin to use these idiosyncrasies and interests to achieve stages four to six of the six stage method: 4. Perspective taking, 5. Academics, and 6. Self-advocacy. Louis was vocal about the importance of helping young autistic people to find their place in the world and doing so through engaging with stimming and intense interests. As he put it, "I'm not interested as a parent, in smiles and high fives. I want these kids starting businesses. I want proper academic performance. I want to see all of this." "Following the child" meant providing a space for autistic people to be free and inhabit their own mode of being-in-the-world. Yet, practitioners' and parents' concerns for the future of their children meant that this was framed by a requirement to coalesce their own mode of being in the world with the constraints of integrating and 'functioning' within society, socially and economically.

In sum, the interactions of people on and off the spectrum inculcated in the practice of "following the child" were engagements of taking and relinquishing control via a process of pressure and release. As practitioners saw it, key to therapeutic efficacy were firstly, only ever applying gentle pressure and releasing before pushing a client too hard, and secondly working with the client in ways that suited their interests, temperament, and autistic symptomatology. Nevertheless, practitioners held the power to frame what constituted helping, and did so not in terms of only providing a space to accommodate clients' individual ways of being in the world in the moment, but also in terms of progress in education, learning how to engage with others in acceptable ways, self-advocacy and eventually, employability.

"The Right Intent": Balancing Care in the Moment and Care in the Future

At every stage practitioners delicately balanced considerations of the potential discomfort caused by the pressure applied 'in the moment' with the perceived therapeutic benefits, stepping in and out from present considerations to future goals. They did so by asking, in highly embodied ways and using as much attentive, affective energy as they could muster in those moments, 'how best to respond?'. Chrissie would often express her discomfort with the normative dimension of what

she was doing. Still, for her it was the "intent" with which she engaged in these normalising practices that validated the pressure to encourage language, communication and social skills to benefit the child in the future. It is in no doubt that "the right intent" constituted an ethical guide for practitioners. However, as explored in Chapter 3, this intentionality was always calibrated through a trans-temporal balancing between the perceived benefits of "sensory integration" "in the moment" with the perceived benefits of social integration in the future. Care in the moment required releasing the pressure a little to avoid overloading and damaging relations of trust. Care in the future required finding ways to keep that pressure on.

These considerations were ones my interlocutors were continually grappling with, evidenced by comments like, "we're not trying to remove the autism, just make things easier". The aim of AM was not to remove autism from the person, but rather to teach the children how to self-advocate in the future - ultimately, then, how to avoid being controlled and dominated by others. To relate the discussion back to care, it is useful to reflect upon Giraud and Hollin's (2017) research on a 'utopian' colony of experimental beagles at University of California, Davis. The study showed that extensive levels of care were received by experimental dogs with the aim of maximizing their utility as experimental animals. This does not make these practices uncaring or deny the positive motivation and affective enactment of their caretakers but indicates that care does not preclude or evade societal pressures. Sometimes, it is inadvertently used to facilitate them. Care can be exactly what instrumentalises life.

Just as practitioners wanted their horses to be able to live *out there*, in nature or the "true wild", in the case of clients freedom entailed a release from expectation, to be allowed to inhabit one's "true nature", something potentially existing outside of social conventions and environments. However, in my practitioners' accounts simply being allowed "to be" and live in "a world of their own" was not ever expressed as an option for the people they worked with. A deep tension thus existed for practitioners between an awareness of how their non-verbal clients might want to live - informed by reports from very vocal autistic advocates who report wanting to live their lives 'freely' out with the constraints of social control in what they reflected upon as a dominating system - and what their parents (and society more broadly) considered was best for them. "The right intent" lay in finding a balance between these agencies of child and parent.

As detailed by the thesis thus far, a range of environments and practices were produced at my fieldsites by horses and autistic people, and particularly via AM practitioners' perceptions around clients' and horses' respective needs that were understood to be very similar. I argue that "the right intent" formed another such coproduced resonance by horses and clients with autism. This

was enacted in practitioners' calibration of "the right balance" found between pressure and its release and relatedly deliberations regarding 'good enough' care for both parties. As I will show below "following the child" and the horse training practice of "free schooling" both necessitated these sensitive, embodied deliberations. These practices coproduced what I have defined as a behavioural niche.

"Jack Picks Up on My Intent": The Practice of "Free schooling"

As I will explore below, "following the child", taking and relinquishing control, and carefully exploring the edges of a clients' comfort in applying and releasing pressure via "the right intent" were muddled with horse training practices at Epona. These practices of intuiting "the right pressure" and its release were modes of attunement developed in concert by therapeutic horses and people on and off the spectrum. A range of training practices were combined at Epona to estimate what handlers held to be the most equal and least dominating form of horse care possible. This care was viewed as the "freest", which was itself equated to being "the most natural". At Epona Lottie - who was responsible for managing both the staff team and the herd of therapeutic horses - trained her staff and volunteers to engage with the horses without physical coercion or force.

These relationships were always the site of active development, rather than constitutive of any 'pecking order' or fixed, hierarchical system of interrelations between humans and horses. Via the appropriate "intent", practitioners moved to what they considered to be less dominating relations with the horses. For Lottie and the others, a fluidity of relations existed. These relations were believed to be partial, enacted in situational context rather than any set dominance hierarchy. This reflected what Lottie saw as their "true nature" - how they were presumed to relate to one another in moments of interaction in the wild. Lottie tried to help me understand this somewhat elusive notion of intent a few days later when she asked me to join her in "free schooling" her own horse, described below.

Lottie wandered down the yard to collect Jack from his stable and I joined her in the indoor arena. I leaned the full weight of my body against the 20-foot-high metal doors to lever them open. Inside, the arena glowed a dull orange, illuminated by the strip lighting on the roof some 60 feet above our heads. I curled up on the mounting block as Lottie began to work with Jack. Working on the yard caring for the horses and trying to maintain Lottie's impeccably high level of horse care; mucking out, filling and carrying nets of wet hay and water buckets, grooming, tacking up and riding since 8am had left me tired. Helping the young students, who all had a range of needs,

also took a lot of concentration, and resting my weary body on the cold wooden slats of the mounting block felt remarkably good. As Lottie worked, she commented on her method of "free schooling". First was lunging, where she asked him to move in circles around her.

At this point he wore a head collar with a long 'lunge' line to guide him. She asked him to move up and down through the paces: walk, trot, canter. Jack tended to rush forward, Lottie told me, because of anxiety caused by the looming arena space, so she worked on keeping him calm. She told me her "intent" was focused on soothing and calming him, slowing his movement. She worked like this for twenty minutes or so, until he stretched his neck down and out away from his shoulders - a sign to her that he was relaxing.

Then she allowed him to come in from the circle towards her. Lottie gave him a good rub on the forehead, unbuckled his head collar and let him loose. This was "free schooling". No bridle, head collar or ropes are used to connect the horse to the trainer. Here the horse is considered "free" to move around the space with no constraint other than the bodily communication of the trainer. Lottie squared her shoulders and directly faced Jack, and the horse moved away from her and out onto the outside track in trot. With that response from the horse, she softened her frame and rotated her shoulders to be less firmly focused towards his torso. In a show of expressive yet muted rebellion, the black and white horse shook his head from side to side and up and down.

I was keen to understand the disposition of this engagement and asked, "What particular moves are you making Lottie? Can you teach me exactly what you do with him?"

> There aren't particular moves at all, with him, or any horse. I mean I suppose if you are working with completely wild horses like Monty Roberts does then the eye contact would be different. You would use much less. But Jack picks up on my intent, not particular body movements that I do each time. I raise my energy, and he raises his. I think it, and he knows it.

I had heard this description of "energy" as a way that horses could be engaged with without physical force, or coercive equipment, throughout my time at Epona. Practitioners often referred to an omnipresent, everyday energetic force binding them together with the horses and clients at all times.

This is reflected in the centre's practice of having an equine shiatsu attend the centre on a weekly basis to maintain the health of the animals, as well as employing veterinary practitioners. I was told that when working with particular horses I was not to use the traditional aids of hands and legs, but instead my "energy" to guide their movement. "You don't use your legs to ride her. She works with your energy. You up your energy and she speeds up. Lower it, and she slows down".

This "energy" was perceived to act therapeutically and was incorporated into my interlocutors' accounts of therapeutic efficacy. These vital energies were used to communicate "intent" and connection between the triad of client, practitioner and horse. This perceived deeply embodied energetic force was understood to sympathetically transmit intent between actors, as intimated by Lottie during the "free schooling" session. When I queried, "How does he know?", Lottie replied:

> Well, people always say a horse can sense your fear. Why then is it so odd to say that they can feel your joy, sadness, happiness, or excitement? I hold in my mind what I want Jack to do and he does it. It's as simple as that. The difficult thing is to keep your own mind clear of other clutter, thoughts. You need to be thinking only of what you want him to do. You need to be congruent. Otherwise he picks up on it all and gets confused.

Lottie let Jack move off the circle on which she had been working him and walked towards me: "Your turn". After swapping places, I began to ask Jack to move. I tried by squaring my shoulders with the line of his body and moving towards him. Nothing happened, and he kept close to me instead of moving away. It was clumsy and disorienting. The beautiful correspondence I sought, and thought I had seen between Lottie and he, was elusive.

I looked over to Lottie for guidance. "Use your intent" she told me, "you have to be more energetic, assert your need". I lifted my arms and asked him to move away by squaring my shoulders again and moving more forcefully towards him. Jack began to circle around me, responding to my request. These moments of command and response were fleeting though. As soon as my mind drifted, he would be off, changing direction, moving out of the circle I was asking him to make with his body. I had to get in front of him to push him back onto the right circle, then as he turned I moved behind him to encourage him on. Just as I schooled him on how to move, he schooled me in the right way to ask.

Jack began to respond to my bodily commands more fully. Each time he did I was offered a fuller inhabitation of the complete attention, clarity of "intent" and bodily congruence required to maintain it. After ten minutes or so I had started to get the hang of things. We brought the session to a close and as we headed back to the stables I felt hyper-aware of my body, and what I was expressing with each movement of it. The feeling, akin to the physical calmness one achieves after a long walk or run, was not emanating from relaxed muscles on the 'inside', but from a period receiving instant feedback from the 'outside', from the horse in response to my actions.

After a tough day working on the yard, the experience left me calmed and somewhat re-energized. I would be there until late evening and now felt ready to get going again. Over the next few hours I was responsible for making sure the run of late afternoon therapy sessions went smoothly, whilst

remaining collected enough to work with five young students, each with their own way of being in the world and communicative style. I headed back up to the yard with Jack, put him in his stable and walked to the kitchen and found Verity there. We had become close through sharing a somewhat lowly status within the yard. Today she didn't talk about her favourite horse Ally via well used phrases. She spoke to me about life at home with her boyfriend and her difficulties with socialising.

> He gets obsessed about things… We're both like that though... I'm in the process of being diagnosed with Asperger's. That's what we think it is… And my boyfriend is too. We think we're on different parts of the spectrum, but both kind of similar to Asperger's.

I was struck by the timing of this broadening of her communicative repertoire.

After the free schooling session with Jack, I was calmer, less hassled and concerned with getting through the tasks of the yard. I realised that rushing around trying to get things done had likely closed off my body, made me less approachable. This bodily calmness was an unexpected consequence of free schooling which made me able to offer Verity better care through being more clearly open to her, allowing her to explain her situation and seek my support and understanding. This clarity of experience and communication will be built upon in the following section on in/congruence. First, though, it is necessary to continue exploring the "free schooling" training method, establishing the partiality of these moments of clear communication, intent and the correspondence between horses and humans they relied upon. By doing so, we gain a fuller understanding of the import of the method for emerging forms of autistic relationality.

Despite how bodily aware the "free schooling" session with Jack detailed above had made me feel afterwards, these moments of correspondence experienced through free schooling practice were not indicative of a pure joyful state of human-animal equality or on-going clarity of communication. Moments of correspondence were clumsy and confusing, a partial affinity (Despret 2013) where I was using my "intent" and pressuring the horse to respond to my will and direction rather than fully being-with in a human horse-hybrid. Similarly, while centre staff sought to work with horses as "they really are" in an engagement of trust instead of dominance, practices of therapeutic work nevertheless placed them under the control of bridles and bits and involved enjoining the horse to comply to the needs of each session. I develop further insight into this ambiguity below by discussing a team trip to an equestrian convention and display and some staff training with Mette, the equine behaviourist who advised Lottie and Saffy on the care of the horses.

As explored in Chapter1 on "the right environment", Lottie, Saffy and the others were well aware that their laborious fabrication was irreversibly artificial and could only ever *approximate* the "true wild" in which horses "were meant to live". This related ambiguous simultaneity and continual reworking between the inescapable control of the horses and the elusive freedom they aimed at weighed heavily on Lottie. I lived through her mercurial shifts from passion and excitement to desolation about the wellbeing of her animals.

Before taking up her job at the centre, Lottie had transitioned from AI (Anglo-Irish aka 'traditional') ethos and practices to NH (natural horsemanship), after finding AI too dominating, aggressive and violent towards the animals. She had worked at a range of NH establishments and had trained in the Parelli method, both of which had informed her practice of working with the horses. However, since arriving at Epona and being influenced by Mette, she had begun to develop her own method. This attempted to circumvent dominance over the horse wherever possible. In so doing, the herd were hoped to be able to live on their own terms as much as possible, rather than mediated by practices informed by a dominance hierarchy - or pecking order - theory of herd interactions.

Lottie, who was responsible for both herd and team interactions, had organised a day out for the team to a local equestrian convention. On the way there, Verity and I sat in the backseats. She kept quiet and looked tense. We arrived and found our way into the large exhibition centre and wove our way through busy stalls selling a plethora of 'natural' equestrian supplies: *Pure Horse Feed* boasting "next to no calories". *Haygain* machines - hay steamers that offered to "clean" the hay from unwanted bacteria, mites and fungal spores - and equine essential oils. We passed a row of stalls advertising equine shiatsu practitioners and barefoot blacksmiths and arrived at the large sand demonstration area in time for a Parelli demonstration. We watched and listened as a young blonde woman gracefully rode her horse around the arena whilst addressing the audience.

As she spoke, the horse performed displays of obedience; one step forward, two steps backward, two steps to the side, circling the back legs as the front were held still so the horse pirouetted on the spot. Her commands were so subtle that to the untrained eye they were invisible. The demonstrator turned her focus to a very tall, lithe man in elaborate Western dress; Stetson, cowboy boots, shirt, tie and jeans. The horse was bare of equipment, with no physical lines – ropes or halters - connecting him to the horse. He directed the horse to circle him in walk, trot and canter, and to walk backwards. Horse and handler then both started to run, and the man jumped up onto the horse's back before stopping and spinning in dizzyingly fast circles in one direction then the

other. The blonde woman told us "as you can see, my husband doesn't need to use harsh aids like a bridle or spurs to communicate effectively with the horse".

As this iteration of bodies moved I was impressed. It certainly looked more 'natural' and freer – with less technology in the form of equipment – than the AI method I grew up with. Lottie had mentioned working for the Parelli franchise for two years during an early interview and I asked her about it as we stood watching. "It looks very beautiful, doesn't it?". After a few moments, clearly carefully considering her answer, I was surprised when she quietly responded, "it *looks* very beautiful, but what you *don't* see is what they do to get to this point. I still think these horses' spirits are compromised." For Lottie, the absence of control was an illusion produced by the deceptive beauty of the interactions of horse and handler. The domination of the horse was no longer meted out on the body with the use of "harsh aids" or restraining equipment but was instead made instrumental in the horses' response to the energies and body language of its handlers. By utilising the modes by which horses communicate with each other, what Parelli call a "behavioural psychology" of "love, language, and leadership" (Parelli 2017), and that Monty Roberts calls "the language of Equus", horse handlers controlled equine behaviour, down to the most minuscule of movements.

Handlers used a form of mimicry of the animal to 'become horse', and in so doing effect their wishes through the action of the animal, remaining in a position of power. For Lottie, these handlers were so deeply and persistently in control that over time the spirit of the animals became "compromised", and they no longer required strong or at times any 'physical' contact to coerce the horse to follow commands. She and the others at the Epona centre were uncomfortable with the Parelli method, feeling that although physical domination was not evident in these displays, a behavioural coercion was key to its efficacy. As Lottie understood it, psychological pressure via the use of body language and the "language of Equus" without adequate release and therefore relatedly relations of trust, could be equally as cruel as physical force. Evading the pervasive emergence of dominance and successfully managing relations of trust with her team of therapeutic horses was always difficult for Lottie and was the focus of substantial amounts of time and attention for all horse handlers at Epona.

"The right intent" offered a way out of this bind, a way of enacting 'good enough' care of the animals. Relatedly, in the continual reworking and orchestrating of successful care practices and relations in training detailed throughout the thesis thus far and in focus in this chapter horses have to be understood as having some agency in the production of "the right intent". Here I remind the reader of Arthur, the horse who would often barge and bolt and generally throw his

weight around were he unhappy with his treatment. This approach allows an acknowledgement of the ways in which horses continually spoke back, rearticulating what was considered 'good' and 'bad' care through their behaviours and the ways in which they coped with the affective labour of their roles as therapy animals.

This was only one mode through which horses were active in the enactment of therapeutic efficacy. Below I go on to show that through inculcating particular bodily inhabitations, languages and dispositions, "free schooling" made practitioners better able to navigate and produce these "balances" between "pressure" and release perceived to be so vital to therapeutic efficacy. I show that in learning these skills the young adults with autism I got to know found ways of pressuring others, of being able to "express intent" more fully and to self-advocate more effectively. I use these phenomena to reflect on the concept of empathy so central to popular and some scientific understandings of autism.

"Horses Taught Me How to Human": In/congruence and Reading Intentionality

Verity was responsible for overseeing the day-to-day activities of the stable yard. As we worked - and with an ever-changing group of volunteers - Verity gave the impression of being a very sociable and able young woman. She came across as open, sharing how she was feeling each day with the volunteers. However, as I listened it became clear that she repeatedly used very similar phrases to communicate her feelings. She often expressed her difficulty with understanding people and their behaviour with statements such as "I'm not a people person", "I'm still learning how to adult", or "Ally [her favourite horse] and I are so similar. We're not bad, we're just misunderstood". It was only as I worked alongside her over the weeks and months that the complexity of her difficulties was revealed to me.

Over the winter the strenuous work of the yard alongside the volume of both classes - and relatedly volunteers to corral into tasks - took its toll on her. Some days she turned up a few hours late. On others, she moved increasingly slowly. In brief periods between setting up for classes I shovelled dirty bedding trying to get the horse boxes clean. As sweat trickled from my forehead, I would hear the heels of her Wellingtons slowly dragging down the yard. Some weeks Verity just struggled to find the energy to lift her feet. She expanded on her difficulty engaging with people, especially in telling them what to do, one day when she and I were out for a ride. This was a big step for Verity, something she hadn't felt brave enough to do since falling off over a year ago. After hearing about her fall, I offered that we could go out together, just for a slow walk, whenever she liked.

It took until the Easter holidays when classes had stopped for a few weeks for Verity to take me up on my offer. The holidays were "getting shorter and shorter", much to the chagrin of the staff. This was the result of increasing numbers of equestrian shows and open days organised to bring in extra money for the centre. In addition, staff were also to manage and find jobs for the young men and woman with additional needs now attending the centre with Choices, the care company Saffy had outsourced the centre's small cabin to as a base for their operations. After making sure the horses in the barn had everything they needed, we tacked up the horses and headed out. We rode out into the open space of the farmer's fields and I kept my reins and legs loose away from Sylvan's side doing my utmost to make sure the ride went smoothly and to avert any further accident that would dent Verity's already shaky confidence. My focus was on keeping my movements slow and easy - to keep Sylvan calm, who would in turn keep Ally relaxed and less likely to bolt off across the fields as she had done previously.

As usual, I asked my many questions and Verity initially started to chat about Ally, who formed the focus of much of her daily conversation. She often talked at length about the similarity between she and Ally. She again told me that they were "so similar. There's not one drop of malice in her. She's just misunderstood sometimes." I subsumed my being into maintaining this calmest of dispositions, in a similar way to that night in the kitchen following my "free schooling" session with Jack. Verity again began talking about how she herself felt, without the usual phraseology I had become accustomed to hearing. During the week before our ride we had been chatting about free schooling as we updated the blackboard with the afternoon classes. She had told me, "I find it hard to read between the lines when people talk to me. It's much easier with a horse. Because they actually show me what they mean with their body". I turned to her and asked her to expand on what she had meant.

> Roslyn: Last week you told me that you found horses easier to understand than people. You told me it was because they show you with their bodies what they mean.
> Verity: Yeah, totally. Horses taught me how to human. I've learned how to almost pass for being normal in social situations [laughs]. Also, they are not misleading. They are always truthful. They don't say one thing and mean another. I really struggle with that. I can't get what people mean. I need them to just tell me.
> Roslyn: You said, 'horses taught me how to human'? What do you mean when you say that?
> Verity: They taught me how to put things across from my point of view a lot clearer. Because obviously horses only have body language to go on, rather than speech. So, I learned how to put myself across a little bit better, rather than just being more aloof, like I used to be.
> Roslyn: And so how did the horses teach you that?
> Verity: The fact that they just deal with what they get. And take what they get from it. And then they kind of show you with how they react to it what they think of you at that moment in time. I notice it more… I find it better to read what people don't say. Whereas

> I used to just take what people say as 'this is the situation'. Whereas people might say one thing and mean another, I realise that might be the case. I've learned to take on the body language as well as what they just say.
> Roslyn: OK. Yeah.
> Verity: So, I can work out a little bit if something else is going on. Sort of read between the lines. I'm not great at it. I'm still pretty bad at it. But I'm better than I used to be.

And so, for Verity, horses lived in the moment, and were always congruent. Understanding their intent (referring to next steps in behaviours and movements, rather than any assumption of complex intentionality) was easier to understand than that of people. No extra interpretation was required to decode horses' behaviour, to translate incongruences between words and behaviours. Experiencing the horses' congruence gave Verity something to compare human behaviour to, providing a new awareness of moments of incongruence, when there was a disconnect between people's words, and their body language.

Verity had not only learned to read between the lines to work out the intentions of others but to express her own intent more clearly. In using her body to pressure the horse to follow her commands, she had to use more force than was comfortable for her. Verity was being taught "free schooling" by Lottie, and in so doing, how to "use her intent". As Verity noted, this had helped her to self-advocate by putting herself "across a little better" with people. This was something I had experienced myself whilst schooling Jack and Lottie had remarked "express your need", as described in the section above. Learning to "free school" had provided quite unintentional effects for Verity as she grappled with developing her people skills, abilities that had a profound effect on the quality of her day to day life. This skill of self-advocating is perceived as an incredibly important one for autistic people to master and is the final aim of AM. Teaching this skill in the early years was understood by all practitioners to lay the ground for a better future – giving people more control over the trajectory of their lives, better relationships and relatedly fewer mental health issues.

This learning process was something also expressed by Thomas, for whom being autistic also meant living with a difficulty in understanding and using body language. He notes that "all flight animals communicate using the body language of Equus". It was his view that this type of body language was not only useful for helping him to understand the communications of others in general. It was particularly useful in engaging well with other autistic people.

> I have since discovered that because many young autistic people are like young or wild horses it can be helpful to use similar methods to aid communication. I now use rounded, soft body language and lack of eye contact when speaking to other autistic people. I try to keep my voice calm and quiet, trying not to sound like I'm angry or shouting around them as we are so sensitive to this. Some say autistic people are confused by body language, but I find it helps to use the

> language of Equus and that by learning the language of Equus autistic people find it easier to understand body language and gestures.

As Thomas saw it, the benefit of learning the 'language of Equus' was bidirectional. Not only was he learning to read others more effectively, he was learning how to communicate and express his own view more clearly for the benefit of others, including other autistic people.

Tri-directional Biofeedback

Verity and Thomas were learning to read the intentions of others, not from what they said, but from what they were communicating with their bodies, suggesting a highly embodied relationality. This was facilitated by learning the practice of free schooling, and thus enacted not only between people on and off the spectrum, but also therapeutic horses. As Lottie taught me, in her understanding it was by fully inhabiting "being in the moment" with the horse Jack and focusing on "expressing my intent" to pressure the horse to do what I wanted him to do, unclouded by other thoughts that would ensure a co-respondence of clear communication and effective connection.

In addition to difficulty with expressing one's intent and self-advocating, a difficulty with reading intentions commonly referred to as being underscored by empathic ability is attributed to autistic people (see Baron-Cohen, Leslie and Frith 1985, Baron-Cohen 1995). Empathy is a slippery term used variously and is differentiated into cognitive and affective forms. Often, the kind of empathy considered compromised in autistic people is cognitive empathy, which is tested for using Theory of Mind (ToM) tasks. Vinciane Despret suggests that whilst problematic, as a term empathy can be returned to the social scientific lexicon as a more embodied capacity than is often promoted by researchers within disciplines such as cognitive psychology and certain areas of the neurosciences. Despret's call to develop our understanding of the more affective aspects of empathy is an agreeable response to what has been an over focus on the cognitive aspects of empathy. Bubandt and Willerslev (2015) however caution against focusing only on the "light side of empathy"; as something wholly good and indicative of only the positive sides of sociality and mutuality.

Whilst initially appealing in acknowledging the more embodied, sympathetic aspects of what is referred to as 'affective empathy'[25] clearly at play in equine therapy, Despret's approach can

[25]Affective empathy s differentiated from the 'cognitive empathy' which is underscored by abilities for Theory of Mind (ToM) assumed to be required to step into another's shoes, and then step back out again.

collapse the complexity and ambivalences of the emerging forms of communication being used to pressure others to behave in certain ways at my field sites. What of this other side of empathy that underscores the equally human ability to overpower others, by "saying one thing and meaning another"? Or to mimic the "language of Equus" to ensure a horse carries out one's commands? What does Verity's discussion about these aspects tell us about autism and communication? Verity and Thomas both had difficulty in engaging with the reciprocal back and forth of shifting power dynamics underscored by the ability to step into another's shoes as a means to gain some kind of advantage over them. Pressuring and controlling others appeared to be of no interest to Verity, who found it difficult to "express her need" and instruct the volunteers on the yard.

The NH approach and learning the method of "free schooling" had quite unintentionally afforded both Verity and Thomas with these insights. This was not because it was "free" from the application of "pressure" and release to coerce and control as the name might suggest, but as I argue, quite the opposite. It taught Thomas and Verity how to use body language to apply pressure to horses and in so doing how to "express their need" to other people. This epiphenomenon of efficacy existing outside of the specific practice of equine therapy was multifaceted. By learning how to free school the horses, the team of practitioners at Epona and Pegasus - which also used a variation of NH - were learning to themselves become more easily readable intentional beings. Learning to be congruent, to focus on being in the moment and thinking only of what you want to communicate without clouding the mind with other thoughts. To be very much "in the moment" was a means by which to express your intent in the clearest possible way.

Not only did this allow the horse to understand you, it allowed people to read your meaning more clearly. Becoming more easily readable in turn helped autistic people with difficulties interpreting others' communications. As Paul put it "good horse people are good autism people". Damian Milton has coined the 'double empathy' problem (2012) to posit that people off the spectrum lack the ability for empathy for those with autism due to a lack of understanding for what it is like to be autistic. I argue that practitioners' new embodiments inculcated through learning how to "free school" quite unintentionally began to effectively address this bidirectional intersubjective mismatch. Inhabiting the relevant disposition and performing the very clear body language for working effectively with horses meant that practitioners were inadvertently able to offer better care for their clients.

In conclusion, this chapter has explored the AM practice of "following the child', one of the main philosophies of AM. This was proposed to circumvent any shutting down of the child, by allowing young clients to be "as they were". Yet for those thought capable of it, AM aimed to teach the

life skills necessary for integrating in the social world, and eventually towards employment. This was illustrated by Louis's concern for "academic performance" rather than merely "high fives". Practitioners thus released the pressure and relatedly control by "following the child", yet only within specific parameters defined by their own and parents' goals.

Clients were pushed towards these goals by practitioners using a delicate interplay of "pressure" and release, as explored in sessions with Evangeline. Practitioners validated this pressure towards more normative behaviours by their use of "the right intent". This was enacted by balancing between both the needs of the individual client and the needs of the collective that would be increasingly applied to them as they became adults. The method was designed around the need for clients to learn how to self-advocate in the future, to provide a level of independence and importantly, to avoid being exploited by others.

All forms of care encompass good and bad (Mol, Poser and Pols 2010). As Giraud and Hollin (2017) have argued, a more critical account of care is required to acknowledge its complexity and the interplays of affective relations and instrumental forces. Care is not always in negotiation with or opposition to instrumental forces. In some cases, care is exactly what instrumentalises life (Giraud and Hollin 2017). Utopian levels of care we used to care for the team of therapeutic horses at Epona and ensured that they stayed well enough to carry out their therapeutic work. This does not make these practices 'uncaring' or deny their positive motivation and affective enactment but indicates – as noted above – that sometimes care does not preclude or evade the pressures of societal forces. Sometimes, it is inadvertently used to facilitate them.

The second practice explored in this chapter, the NH method of "free schooling", was used by horse handlers at all sites.[26] This was perceived by some to help practitioners be more congruent and become more easily readable intentional agents. This in turn helped autistic people to intuit their intentions and meaning more easily and helped address what Milton (2014) has termed the 'double empathy' problem. In a layer of unintended therapeutic efficacy – with efficacy being defined by AM goals - it was through learning this ability to dominate others that Verity and Thomas were aided in learning "how to human". The chapter contributes to a growing anthropological interest in the slippery category of empathy by exploring what were considered by Verity to be the very human capacities of "reading between the lines" and "saying one thing when you mean another".

[26] This applied to all excluding the Atalanta ranch who used traditional lunging techniques, which whilst similar in task, were based within traditional AI and classic dressage horsemanship methods.

Enacting the right levels of "pressure" and release via effectively timed movements through space – in both "following the child" and "free schooling" - is a process by which horses and humans coproduced what can be understood as a mutual ecology of attunement. That is, an attunement existing in active relations rather than passivity, albeit via the interplays of relations of pressure and release, constraint and freedom. Indeed, whilst appearing less punitive than other autism therapies, and more traditional forms of horsemanship that used physical lines of control meted on the animals' body, these correspondences were in no way equitable. They were instead enacted in partial relations of normalisation, dominance and domestication through the mimicry of equine body language and 'becoming horse'. This understanding leaves room for the ambivalence between connection and division evident in the care practices at the centre. Contrary to Latourian emphases on the wholly distributed agency of all actors (human and nonhuman alike) I argue that the relations in my field sites were not in any way symmetrical, but rather constituted by laborious attempts to enact relations of equality.

Chapters 3 and 4 have detailed a behavioural niche required for this particular kind of sensorially-mediated kind of autism to be enacted within my field sites. This is the second of two niches this thesis details. I have suggested that AM acts as a site of looping in autism. This behavioural niche detailed in this second section of the thesis (Chapters 3 and 4), along with the environmental niche (detailed in Chapters 1 and 2), are central to the emergence of this kind of autism and the looping process. The next chapter explores the more minute bodily processes by which more affective and sympathetic communications between horses and humans were enacted as my interlocutors understood it. This signals another reduction in scale and delving "in" to the body. It also signals a shift to detailing a third and final physiological niche that I argue was central to the emergence of this kind of autism and the looping involved in its emergence.

CHAPTER 5 - "Limbic Resonance is What We Call It": Transspecies Transmissions of Affect.

The staff at Epona and I gathered in the kitchen before taking part in a team building exercise. This was an equine therapy 'demo' from a team of equine assisted psychotherapists (EAP) hoping to set up their services at the centre. As Joanne put on the kettle the other staff slowly filled the kitchen and began to change their shoes for boots. Chatting as they did so, I began to get an unnerving sense that we would be the ones taking part rather than observing, making it less of a 'demo' and more of a group therapy session. With tea in hand we made our way to the teaching room in the small cabin that sat on the back yard punctuating the end of the barn of stables from the fields.

Each taking one of the seats placed in a circle around the edge of the space, we were invited to introduce ourselves and give some background to our 'journey' to Epona. The room started to warm, and people peeled off layers. Once the introductions were over, Francesca told us that in her practice of equine facilitated learning (EFL) self-awareness was paramount. "We never leave the introduction room until everyone is grounded. And their energy is calmed. Otherwise, it's not fair on the horses. Quite often you'll ask people 'how are you?'. And they'll be like 'yeah, great!' and seem like they are really well and full of energy. But when you get them out with the horses, they tell a different story. Horses can pick up on what's going on." Kim shifted in her seat and looked around the room as Francesca asked us to ground ourselves by practicing what she called a "body scan".

She led the practice by slowly asking us to take our attention to various parts of our body, noticing and acknowledging any spaces of tightness or discomfort:

> Once we get outside, what I want you to do is begin by choosing a horse to focus on and scan. It doesn't matter how close you are, or which horse it is in the field. As you scan, if you pick something up, go back to scan yourself to see if it's you. Once you've established who holds the tension, go back to the horse again.

We all shuffled outside and tentatively spread out across the muddy field trying to each find a horse to pair up with and "scan" and in so doing learn how to feel for the affective states of others. Out of the corner of my eye I saw Daniel - the photographer the team had brought along for the day – looking bemused as he stepped through the cloying mud to get a better shot of Kim. This arrangement of horses and women staring at one another must have looked absurd to him. This ability to "pick up on what's going on" was a capacity of the horse that was invoked frequently in the context of describing the efficacy of the various horse-based therapies on offer.

Clients, practitioners, parents, teachers and care workers all reflected this ability of the horses. How, I was intrigued to find out, was this "picking up" understood to happen?

When we had all finished "scanning" and taken our seats again in the cabin Francesca provided a way to qualify the taken-for-granted connection so intuitive to the team here when she told us; "it's something older than the hills. It's one of the oldest parts of the brain that we're engaging with… Limbic resonance is what we call it". This notion of "limbic resonance" encapsulated the shared properties of and modes of material and metaphorical resonance between humans and horses promoted by my interlocutors. I argue that "limbic resonance" offered a way to comprehend the ways in which finding "balances" between effective "pressure" and its release, and "sensory integration" and social integration were intuited. This chapter shows that the term can be understood as a way of expressing what I argue is a multispecies transcorporeality used to explain horses' power as therapy animals.

In this chapter I unpack these perceived transspecies corporealities[27], and their situation within the proliferation of symbolic matterings mingled into a model of therapeutic efficacy by my interlocutors. Each of these relied on particular views of the body, mind and environment, existing in continual biofeedback loops. These modes of efficacy were perceived to be enacted via holding the relations of "balance", "pressure" and "integration" in harmonious proportion, achieved via these transspecies resonances. These relied upon an understanding of the person and her or his engagement with their social and physical environment as mediated by the limbic system of the brain but also the endocrine system of the body. By unpacking this phrase "limbic resonance" we can delve deeper 'in' to the body illustrating what was understood by my interlocutors to be a deeply enmeshed body-in-action, understood as the seat of the mind and sociality. I show that attributes of "flightiness"; a particularly reactive limbic system, and concomitant heightened "fight, flight or freeze" response were understood to be shared properties of horses and clients with autism and allowed for these resonances.

I argue that this worked to animalise autistic people to a certain extent. However, all people were animalised by these allusions to "limbic resonance", not only autistic people, reflecting a broader societal preoccupation with human's place in the animal kingdom. As I show, this resonance

[27] The languages of resonance and 'energy' were used widely at Epona. However, I did not hear these referred to at either Atalanta or Pegasus. This reflects Epona's particular focus on finding more equitable relations with their therapeutic animals, and the amount of time spent collecting data on and understanding these aspects at this site. Atalanta practitioners did advocate the use of more mystical, cosmic techniques such as crystal healing beads as detailed in Chrissie's engagements with Angeline in Chapter 5. Though I did not spend sufficient time at this site and with these people to make any claims as to their use of less biomedical languages in descriptions of efficacy.

looped back to all people, and it was understood that all people experiencing significant stress would enter the "fight or flight" response. The mastery of the "fight or flight" response and limbic system – "one of the oldest parts of the brain"- were one mode of action on the body through which neural (and behavioural) plasticity of the autistic person could occur. I firstly explore the limbic system this resonance relied on in the context of my field sites. I show that the "fight and flight" response acted as a "hard-wired" mode of organising and comprehending behaviour in stressful situations via the limbic system and hypothalamic - pituitary – adrenal axis (HPA) in the contexts where my data was gathered. I then go on to detail the "flightiness" shared by humans and horses, which became more apparent as my time in the field went on.

I trace how the bodies and brains of the young clients were enacted in multiple ways. Specifically, that states of equilibrium were perceived to emerge, through equine therapy, out of more pervasive embodiments of sensorial flux. A model of a "hard-wired" and hierarchized limbic system, defined as "the oldest part of the brain" was understood to return the autistic body to a "balanced" homeostatic equilibrium via the function of the hypothalamic-pituitary-adrenal (HPA) axis. This assertion of a hierarchized brain coexisted with a contrary model of an atemporal brain in continual flux capable of processing "inputs" simultaneously, in parallel. Finding these spaces of bodily homeostasis, via a "hard wired" limbic system, was counterintuitively perceived to facilitate neural plasticity. As Amy told us, "the brain is very plastic. The brain is always evolving". Not only then, as her comment suggests, were individual brains considered to be evolving, so too was the way in which they were conceptualised by the method founders, practitioners, and parents.

It is useful here to highlight to the reader that by detailing these interplays between homeostasis and flux, sequential and parallel processing, and the simultaneity of "the oldest part of the brain" with its atemporality, this chapter serves as a narrative thread. It links between the inverted simultaneities of movement and repose, action and stasis bound up in my notion of the sensorially and rhythmically mediated state of stillness in motion I use to understand my interlocutors' explanations of therapeutic efficacy. This chapter indexes my interlocutors' use of the notion "balance" in encapsulating therapeutic efficacy. In later sections the chapter also returns the focus to their use of the notion of "pressure". This chapter is the first of two (Chapters 5 and 6) detailing what I call the physiological niche. This is the third of three such niches that I argue were required for the emergence of this sensorially-mediated kind of autism via AM practices.

This will delineate for the reader the melding of a diversity of bodily systems in my interlocutors' model of therapeutic efficacy, in worldly inhabitation of the environmental and behavioural niches

already detailed thus far. I argue that this range of systems indicates my interlocutors' difficulty with fully comprehending not only the complex dynamism of lively bodies, but also the dynamism of the condition of autism. These three niches substantiate my claim that AM practices act as sites of looping effects in autism. After giving some detail on biomedical understandings of the limbic system, I situate the chapter within an evening demonstration from the world-famous horse whisperer, Monty Roberts that I attended in March 2016 with Verity and Thomas, two young adults in their 20s. From this three-hour demo, I zoom out to other conversations, and a back-riding session with Chrissie and Andrew.

"Know Much About Limbic Systems, Do You?": The Simultaneity of Hierarchized and Parallel Processing

It is useful to gain an understanding of the biomedical epistemologies that imbued people's understanding of the limbic system, and therefore how the therapy was perceived to work. The limbic system is made up of the hypothalamus, amygdala and hippocampus and is widely regarded as the brain region that deals with emotion and stress. The limbic system is often referred to as the 'paleomammalian brain', an area that deals with 'lower' functions than those of the neocortex. The defining of the limbic system as 'paleomammalian' reflects the 'triune' model established in 1990 (MacLean 1990), which hierarchized the brain into three sections, with each region considered to have evolved ancestrally. First is the reptilian brain, responsible for automatic functions of the body and shared across reptiles, mammals and humans. Second is the paleomammalian brain (also known as the limbic system), responsible for stress regulation and emotions and shared across all mammals. Third is the neomammalian brain (or neocortex), the so-called 'rational brain', responsible for complex, abstract, executive functions, shared by only the 'higher mammals'. This gives some context for Francesca referring to the limbic system as "one of the oldest parts of the brain". It is conceptualised as being responsible for mediating stress responses to threats in the environment, otherwise known as the "fight or flight" or "stress response".

The "fight or flight" theory was developed by Walter Cannon in 1915 (Cannon 1994) to explain both animal and man's means of survival via either defence or escape. Cannon held that emotional disturbances caused the body to discharge the sympathetic nervous system and release adrenalin, preparing the body for a response to a perceived threat. Cannon later coined the term homeostasis (1929) adding to this model of the sympathetic and parasympathetic nervous systems. Homeostasis defined "the bodily equilibrium of a steady state controlled automatically by the autonomic system in the face of disruptive external or internal forces" (Cannon 1994, 148). "Fight

or flight" via the process of finding homeostatic balance was believed to return the body to a state of balanced equilibrium. To remind the reader "balance" operated as one of three central metaphors that I argue were used by my interlocutors to explain therapeutic efficacy in a context of great complexity and uncertainty surrounding equine therapy and autism.

Until this point in the thesis, "balance" has been explored in relation to the senses: "deep pressure" as a "sensory input" applied onto the body or onto the clients' sensory threshold between "sensory integration" and "sensory overload". These references to "fight or flight" now detail a homeostatic balancing of the parasympathetic nervous system and endocrine system. In Cannon's view emotions and sensory experience were simultaneous. This sits in contrast to the James-Lange theory of emotions, which posits that physiological arousal through a sense organ occurs first, and on conscious awareness, an emotional response or feeling is attributed. My aim here is not to base the chapter within these scientific understandings, but to explore what local uses of these theories and related terminology can tell us about how my interlocutors understood autism as a condition produced by interrelated immune, endocrine and neurological systems of the body. This chapter explores how the "fight or flight" response, and relatedly the immediacy and simultaneity of perceptual experience and emotion as promoted by Cannon, were central to my interlocutors' understanding of not only how humans but also horses engaged in therapeutic relationality.

Paul described his understanding of limbic system processes. In so doing, he takes his understanding from the older model of equilibrium and steady states proposed by Cannon over a century ago, to a more complex – yet related - system of simultaneous "parallel processing" from multiple sources.

> All our sensory input goes into the limbic system first, where it is pattern matched. The thinking is that [with] the rapid survival response, if you process information sequentially it takes too long, so the idea is that the brain processes in parallel. The understanding is that because it has to be processed and go through the amygdala to the frontal lobe, conscious thought can follow as much as a second behind what the limbic system is doing. It's that reflex action stuff. But if the emotion is low level [the brain goes] 'it's fairly low level, let's think about it' [consciously], if it's high level we react. So, the brain is hard wired for anxiety. It makes a lot of sense for people dealing with autism and developmental difficulties… If the emotional state is high [people get] very angry, upset, frightened, [and] conscious thought tends to diminish.

For Paul then, prior existing emotive states framed how one perceived the environment. Emotive states could be both "low level" and able to be consciously apprehended, or "high level" and invoking the preconscious "reflex action stuff".

In his description and in our subsequent conversations Paul often alluded to this model of the brain and emotional function. Contrary to the hierarchisation of the brain differentiating the limbic system from the other regions described in the section above, we can see that Paul interpreted brain function as less hierarchized or sequential and as a more fluid "parallel" process in flux. Paul initially mimics the regional differentiation of the brain proposed by the regionalising of the reptilian, paleomammalian (limbic system), and neocortex areas. He states that information "has to be processed and go through the amygdala (limbic system) to the frontal lobe (neocortex)". However, evolving his view of the limbic system, he challenges the sequential view of processing, and thus the hierarchization of processes from "lower" brain to "higher". To remind the reader, it is this "higher" neomammalian "rational" brain that is considered shared by only the "higher" mammals such as primates.

This idea of parallel, rather than sequential processing simultaneously suggested an alternative understanding of the relation of the emotions to the senses to the James-Lange theory of emotions. This posits that sensory experience happens 'first' and gives rise to emotive feelings that we then become consciously aware of. This theory, so-called after William James and Carl Lange simultaneously developed the concept, remains central in the psychological and neurological literature on the emotions. This sequential view of the senses occludes the immediacy of perception and affect Paul had experienced with his own child, and the clients he had gotten to know over the years in his roles at Pegasus and the National Autistic Society (NAS).

That one could perceive, experience and react to "high level" emotion pre-consciously is counterpoised to the sequential view of the emotions enshrined in the James-Lange theory of emotions and still widely used within the sciences. Paul and others' references to both homeostasis and flux suggest a simultaneity of physiological arousal and emotion and a collapsing of what he referred to as "processing time". This was one of many uncertain simultaneities that formed the bricolage of knowledges on which a multifarious understanding of therapeutic efficacy was built.

For Paul, the brain and its processes were more fluid and flexible than the sequential view promoted above. In his view, neural processing happened in parallel, and by working with this one could ameliorate and hope to change the symptoms experienced by autistic people. "You see it a lot with autism meltdown" he told me. Autistic people were understood by Paul to be all too aware of their behaviours, they simply struggled to control them. "Which is a very frightening thing to deal with… what you say does go in, but they can't necessarily act on it." Throughout the 16 months I spent getting to know Paul and listening to his understanding of how autism affected a person, cognitive ability was never in question. Rather, it was "accessing" it that could

be problematic. Providing "the right environment" consisting of spaces in which to avoid the anxious states that limited this access was central to the AM method.

Getting "the emotional state down" was seen to be "incredibly helpful" and the horses were understood to do just that by modulating hormonal flows. Paul linked the limbic system of the brain to emotions and feeling, bodily experiences enacted by the senses through the production of hormones in the blood. "[By using horses] you're reducing the anxiety state, and that's good. Cortisol levels come down. Adrenaline levels come down, noradrenaline levels come down". Equine therapy's effects on the limbic system were thus understood to have a direct effect on endocrine system processes that formed part of the stress response of the body. Louis, founder of AM, echoed this in his own references to the effects of AM on the hypothalamic-pituitary-axis (HPA), linking the brain's hypothalamus and the body's endocrine system. These perceived hormonal flows will be explored in more detail in the next chapter. For now, I focus on perceptions that autistic people experienced repeated anxiety-induced stress states. This became more apparent to me as I spent increasing time with my interlocutors with autism, as described below.

"I Think This Might Be Why I Fit with Horses and Ponies Well": "Fight or Flight" as a Mode of Transspecies Resonance

A few weeks after taking part in the equine therapy 'demonstration' that opened this chapter, I travelled with Verity to a demonstration by the 'Horse Whisperer' Monty Roberts organised by the wider equestrian community. She had mentioned several times that being a horse trainer like Lottie might be something she'd like to do "when she grows up". I bought tickets for us to attend and arranged to meet Thomas there. Verity and I made our way to the venue, an agricultural college in a rural town around 50 miles from the Epona centre. Verity was visibly nervous about the event. In the days before the event she told me that she struggled with big crowds of people, and it had taken her a lot of effort to agree to come along.

We parked and made our way from the car park into the large and bustling equestrian arena. It was typical of this kind of space, made of 40-foot-high metal sheet sides atop 1m concrete walls. A huge space 70m long by 40m wide, the rectangular arena had the capacity to seat 600 people around the edges on clattering, fold-down, plastic seats. The sound of the growing crowd reverberated harshly around this large, booming space. The light was strong and bright white adding to the intense atmosphere. People moved in all directions and feeling tense myself, I looked as Verity's head darted left and right. We made our way over to the seating area and found

Thomas. He was fidgety and as we chatted, shifted his weight quickly from one foot to the other. This kind of movement feeds into the misperception that autistic people may not be listening to or acknowledging you or engaging socially at all. However, Thomas was clearly listening to me. Despite looking around and being thoroughly distracted by the throng of people, the cacophony of voices and the strong lighting, he answered my questions and chatted as best he could in the circumstances. He just was not looking at me or giving me the physical cues one learns to expect. I turned my head briefly to address Verity and introduce her to Thomas. I looked back and with that he was gone. Verity and I made our way through the cram and found two seats.

Thomas's disappearance mid-conversation reminded me of the understanding of "flightiness" Paul had explained during a previous interview. For Paul, new environments such as the one Thomas and Verity found themselves in that evening, were inherently problematic for his own son and the people he worked with. Such an understanding of the difficulties experienced by autistic people is not restricted to the equine therapy context and is increasingly widely reported in the self-advocacy literature (see Chamak 2009, Davidson and Henderson 2010) and the subject of recent public awareness campaigns from the National Autistic Society (Anon 2017). According to Paul, in order to manage stress responses and remain calm, time was needed to get to know the physical geographies of new situations.

New environments were particularly difficult, requiring increased attention and "processing time".

> If you put people in a new environment, they find it harder to pick up predator movements and stress levels go up. Whereas if they are in an environment they know, their whole background, their whole subconscious processing knows the environment. And they can spot whether something's out of place very quickly. Autism is difficult because it's all about understanding and visualising and processing. Some autistic people don't understand the physical environment. Autistic people get selective detailed vision. Where they won't see the whole room. They'll see bits of it, they'll see the colour of your eye or a pin down in the corner, you know. Which means it's hard for them to have formed a construct of where they are, which is scary.

This difficulty with processing the physical and sensorial geography of the world into a usable map was understood to be stressful for his clients with autism. In Paul's understanding, in this state "conscious thought tends to diminish". Consequently language, learning and normative social engagement become problematic.

Paul suggested that "by generating a calm, trusted environment" practitioners, family members and teachers could all calm the stress response and associated anxiety, helping the person to relax and for "cognitive abilities to come to the fore". Producing this environment, as seen in previous chapters, took significant periods of time to achieve. For Thomas, Paul's interpretations of the

functioning of the limbic system in autistic people described above were appropriate for his experience of the condition. They also gave him an insight into what he saw as his strong connection with animals:

> At school I would walk out of the school gates or climb onto the roof of the nearest classroom to escape the teachers and bullies and this led to my label of unteachable child. Break and lunchtimes for me consisted of dodging the bullies and teachers and trying to stay away from anyone who looked scary including anyone new or different. I think this might be why I fit with horses and ponies well. After all we both have a strong fight or flight response and are both hyper-sensitive to our surroundings.

Thomas describes developing this awareness with the training of Danielle, an equine therapy practitioner at a third, much smaller site 50 miles from Epona.

Danielle had also been trained by Louis from the Atalanta centre in the USA in 2010, when he visited the UK and had trained Paul and Chrissie.

> Danielle introduced me to the silent but wonderful flight animal's language of Equus. Flight animals like deer, moose, elk and zebra instinctively run away when anything they don't recognise approaches. And their main thoughts are 'I am safe' and 'when or where is the next danger coming'.

Lottie had also emphasised this "fit" between autistic people and horses with me during an interview back in November 2015.

> I think that's what makes autistic people similar to the horses. They are so sensitive to everything. If a horse spooks, most people look and if they don't see anything they say, 'stupid horse, there's nothing there'. But there is something there, we're just not sensitive enough to see, feel or hear it."

Lottie explained experiencing her own autistic clients as more sensitive and reactive, or 'wild' than the non-autistic. It is important to note here that Lottie did so hesitantly, aware that making such an allusion was problematic.

> In my mind, humans are animals as well. And I feel that the autistic people that we work with are in some ways, sometimes more innately tuned to almost being slightly wilder. I don't know how to put it… their natural hardwiring is more heightened than that of people that are not with autism and therefore [you try] to… put across that feeling of, 'you're safe, and I mean you no harm'. And trying to create, you know, a little bubble. Because when you are upset, whether you are a human or horse you very often can't assimilate words anyway. It has to be something more powerful than [words] to deflate the situation.

Echoing Paul's concern that states of high anxiety limited cognitive function, Lottie suggested that:

> If you've already gone into that fight and flight state, processing can't be the same. From my understanding of it, which is very unscientific, and bits that I've tried to grab from experience and bits of reading, that's how it appears to me anyway.

This "heightened hardwiring" shared by horses and autistic people suggested by Lottie was something all practitioners trained in and working with AM also shared. Expressions of this shared hyper-sensitivity to the environment, and its mediation through the fight or flight mechanisms of the body were discussed at times and emerged especially strongly in moments during sessions such as the one described in the opening section of the Prologue, when I was told, "Sylvan and Andrew are two peas in a pod. [Andrew] doesn't like it when things change either."

Reinvoking Paul's earlier assertion that change to one's environment was a challenge to autistic people, Lou suggested that both horses and the young boy she cared for shared a predisposition to having difficulty with flexibility. This inflexibility will be taken up in the next chapter. Here I will highlight that whilst considered to share a "heightened hardwiring" the sensitive bodies of horses and clients were not described as self-contained, but always in relation to environmental situatedness. Aspects of the environment could produce reactions of the "fight or flight" response. Chrissie echoed this allusion, positioning the similarity in terms of the "fight or flight" response. "Yeah, I think that's what makes horses and autistic people the same," Chrissie told us. "They both share that they have an overactive hypothalamus, the part of the brain that controls the "fight, flight, freeze mechanism".

The sensitivity Chrissie referred to was seen as part of the horses' prey behaviour that worked on a "fight or flight" basis. It was deeply entwined with the environment, and the hormonal flows evoked by the limbic system in these "fight or flight" states:

> And his sensitivity is what makes [Sylvan] really good at the therapy. And makes him really tune into the kids. And when I'm working with him, he tunes me out and tunes into the kids. He's kind of got half an eye on me, but he's much more focused on the kid… he'll pick out who needs the work. You know, he'll decide.

That the horse could listen and feel by effectively "tuning in" and synchronising with the affective states of humans was taken for granted by practitioners at Epona. This takes a further step in understanding the perceived resonances between clients and horses. It extends the resonance that Chrissie felt was shared between herself, Sylvan and Frankie as they learned to "listen" and "speak" with their bodies, as detailed in Chapter 3.

This extends the multispecies engagement detailed from a behavioural relation to one of transspecies physiologies. This affective limbic resonance shared between horses and humans was described to me as a transmission of rhythmic messages from blood pressure signals and heartbeats that horses were believed to be able to "sense". This brings the focus back to another use of the material metaphor of "pressure" used by my interlocutors. To detail this further I immerse the reader again with Verity and I during the Monty Roberts demo. As we sat watching

and listening to Monty Roberts in that cold, booming equestrian arena he began to explain to the crowd just how he believed limbic resonance happened.

Resonant Transmissions: Horses are "Hard Wired to Understand What Our Heartbeat Means to Them"

Verity and I had been sitting for a few minutes chatting about the team of horses at the Epona centre when Monty arrived in the arena. The babble of the crowd reverberating around the large metal building started to dampen down. At 80 years old and only a few weeks out of hospital after two knee replacements, Monty moved surprisingly nimbly across the round metal pen assembled in the centre of the large rectangular riding arena. He welcomed an Appaloosa horse (white with black spots) – which he told us he had never seen before – into the approximately 10m diameter pen. As he took the rope from his assistant, he gave us some history. The horse had never been ridden, or had a saddle on, but had been handled by its owner.

By shifting his position as he stood, he asked the horse to move forward. After increasing his focus, and moving towards the animal slightly, the horse responded by moving up the paces, still circling around him as he stood in the middle of the round pen. The horse had his right ear and eye angled in Monty's direction, the left ear and eye on the crowd. Monty softened his body and the horse slowed to walk. Then by shifting the direction of his shoulders from facing right and towards the horse's quarters to a central position, he stopped the horse. Turning his shoulders to the left, and squaring his body with them, he made the horse move off in the other direction. Again, the horse moved around him as he stood almost completely still in the centre of the pen.

The horse began to stretch his head and neck down as he moved in trot, his eyes still focused on both Monty and the crowd. Monty pointed this out to us. "He's relaxing down. That's him showing that he is accepting me. That I am the boss. See now he is licking and chewing. Another sign that he's with me now. He feels safe". After a few minutes like this, he told us he would ask for what he called "join up". A signature process for Roberts, this is where he stops "sending" the horse away from him and "allows" him to turn in to the middle of the circle to greet him. Roberts began this process by characteristically softening his body and turning away from the horse. His eyes came down and rested gently on the space between the crowd and the floor in a less threatening manner than before, releasing the pressure of the interaction on the horse. "Now I'm going to turn my body and invite the horse to come in to me… [the horse does]. Bingo… join up. And I'm going to walk away from him, because now he trusts me." Roberts walked away

from the horse and it followed him around the pen. "He comes to me because I'm the safe place" he told us.

Again, as with the equine therapy practitioners leading our staff demo at Epona, the horse was imbued with the [therapeutic] ability to "pick up on things", to intuit the feeling and intent of the person inhabiting the space with them. This was believed to be achieved – amongst other postural channels - through the sympathetic exchange of cardiovascular information between their bodies. "How does he know that I'm the safe place? Because I have a pulse rate of about 54 right now…" Monty tells us. He went on to describe a research project he had been contributing to. It measured the stress levels of horses during training with his methods, versus more traditional methods of horsemanship. "It was unbelievable how much more relaxed, and how much less stress there was on the horses I worked with" he told us.

Using a monitor, the research team measured the heart rates of the horses as they were trained, alongside the rates of the trainer working in the round pen, and the owner sitting in the crowd.

> And who had the highest heart rate? The owner! Every time! Unbelievable. The owner is safe up there sitting in a chair [laughter]. And I'm out here in a vulnerable and dangerous position. Apparently. But I can keep my heart rate in the 50s out here working with the horse, and they know it. They can sense stress and they will synchronise with the animals around them. Including human beings.

Roberts told us that each time it was measured, the horses' heartbeats and his began to beat in time, synchronising with each other. The crowd gasped in amazement at this revelation and he introduced the next stage of the demonstration - putting a saddle and a rider on the horse for the first time – before calling a scheduled break in the programme.

This ability of horses to "listen" to bodily messages perceived to be transmitted sympathetically by humans and in so doing intuiting "what was going on with them" was discussed often by Chrissie, Lottie, Saffy and Kim. In Saffy's words, "if on the outside, you're calm but on the inside, you're not, the horse will recognise that". The team referred to the horses' ability to hear others' hearts beating, suggesting that if they could hear this, they could also sense a person's blood pressure. Responding the signals one's body was emitting, rather than the facade one wanted to portray meant that horses could intuit how you were feeling, including incongruences between the two as explored in Chapter 4. "Everything about your person is reflected in your heartbeat", Chrissie told me, even one's incongruences, no matter how well you felt you may have concealed them. The energetic resonances of blood flows and pressures were thus understood to not only carry but transmit signals relating to one's health or ill-health, or intent from the blood flow of

people to the limbic systems of horses. These flows in the blood will be expanded upon in the next chapter.

My interlocutors referred to a range of environmental, behavioural and bodily resonances detailed throughout the thesis thus far. These were the need for "the right environment" and a particular sensitivity to one's environs (Chapters 1 and 2) 'tuning in" (Chapter 3), and "intent" which could be transmitted by "using your energy" (Chapter 4). This was a system believed to be engaged by Onie, the shiatsu practitioner for "healing blockages" in therapeutic horses that were understood to be the result of the emotional and physical weight of therapeutic work. "Limbic resonance" was another related and more specifically corporeal mode of resonance. It can be understood as a situated, multispecies transmission of affect. Affect, in the case of my interlocutors, referred not to internal feeling isolated from the environment, but feelings and emotions directly experienced, and processed in "parallel" (as described by Paul above), and with deeply enmeshed engagement with what they referred to as "the human" and "physical environment".

Horses were perceived to be able to "listen", "hear" and "feel" how one was. They were imbued with the power to become "tuned in" to the behaviours of clients. A shown here, they could also "tune in" to the bodily flows of clients, sympathetically affecting and being affected in doing so. These signals allowed, as Monty Roberts saw it, a "synchronisation" of the heart beats of horses and humans. Chemical and electrical synchronisations between the bodies of people, and also between the bodies of people and musical rhythms are referred to as "entrainment" within biomedical literatures. These ideas and the descriptions of sympathetic exchange of feeling through "tuning in" and "limbic resonance" expressed by my interlocutors problematize notions of 'inside' and 'outside'. Relatedly, the emotional boundedness and energetic self-containment of the subject was not considered the baseline state of living beings.

These states could certainly occur as one shut oneself off when not wanting to engage with others. Instead, through leakages via deeply material modes of emotive and affective transmission and energies, humans and nonhuman animals were perceived to be intrinsically connected. This underscored my interlocutors understandings of therapeutic efficacy. My interlocutors maintained somewhat contradictory notions of the sequential processing of emotions, as per the James-Lange hypothesis, and the parallel processing of emotion and affect as per Cannon's theory of emotions through this energetic flow of resonances. I suggest that the simultaneous use of these opposed models of the emotions indicates the uncertainty around autism and the dynamic bodily systems that my interlocutors were engaged with. Only by imbricating a range of bodily processes and

relatedly biomedical and lay knowledges could their experiences with clients begin to be encapsulated.

I argue that a range of more or less authoritative models were incorporated by my interlocutors into an autistic body-self-world which could more fully comprehend their experience, including in focus here endocrinological, neurological and vitalistic knowledges. Whilst appearing somewhat esoteric, practitioners' descriptions of these affective transmissions did trend with some wider and authoritative biomedical research on circadian rhythms and entrainment encouraged by the National Institute of Mental Health (NIMH). Scaling down through the body, from the limbic system and HPA-axis, it was understood that the flows of the hormones cortisol and oxytocin in particular (as introduced in Chapter 2) were released by these bodily systems and central to effecting therapeutic change. These hormonal flows in particular will be explored in more detail in the next chapter. In response to the import of multiple and extending temporal registers and rhythms to the data I ask: how can these apparently emergent and immediate resonances, flows and transmissions of affect be historicised?

Firstly, entrainment can be seen as a form of being 'in time' with others – a harmonising of the circadian rhythms of multispecies bodies, transmissions relating to heartbeat and blood pressure resonating and feeding back and forth with those of the horse, practitioner, (parent if present) and environment. Building on Alaimo's notion of transcorporeality (2010) and Brennan's transmission of affect (2004) I suggest that the bodily transmissions being expressed by practitioners constituted a system of spatiotemporalized biofeedback loops where the bio- refers to a deeply subjective material body. I also suggest that my interlocutors evoked an understanding that the bodily pressures, temperatures, and hormonal flows among other bodily registers of autistic people could reflect asynchronous rhythms of heartbeats and blood pressures, intersubjective im/balances and concomitantly stress states built up over significant periods of time.

The sensitivity of horses' "fight or flight" mechanism was seen as a key facilitator of the horses' ability to heal, and "resonance" was described via neurobiological languages of material, affective transmissions and signals from blood pressures of the heart. As noted, these resonances were the mode by which harmonious proportions of "balance", "pressure" and integration" could be intuited by practitioners and horses and used to entrain clients relationally by becoming synchronised with bodily and social rhythms and enacting kinetic melody. These perceived resonances of the limbic system reinvoked these notions of blood "pressure" and homeostatic "balance" that I argue held the multifarious models promoted by my interlocutors together. At

Epona the vague notion of "energy" also abounded as a vitalistic force incorporating these resonances between horses and humans, as established in previous chapters and explored in more depth below.

Energy: "We All Share the Same System"

Energy existed as a powerful force at Epona. Its perceived ubiquity did not become clear to me until the Spring following my entry to the field. The days I attended the centre had changed and I was encountering Onie the equine shiatsu practitioner on more occasions. Intrigued by her practice I booked in for a massage. I arrived and got myself settled on the mat she had prepared in "Jenny's Lodge" a space recently purpose built for parents to access a range of therapies whilst their child was taking part in sessions. As she worked to unblock my meridians I inquired about how shiatsu translated from humans to animals. She told me, "we all share the same system". A few weeks later Onie was back on the yard. She walked over to Cracker's stable remarking. "He's looking over at me and nodding his head. It's his turn".

After gently laying her hands on Cracker, she made her way towards the feed room at the top of the yard. Saffy's springer spaniel wove herself between Onie's legs. "Hello, hello" Onie welcomed the dog as she bent down to pat her. "Well you haven't ever asked me for one before. What's the matter with you today? Need a bit of treatment, do you? Do you need a shiatsu? Do you?". Kim's lurcher approached and looked up at Onie as she slinked past her. "Well I know that you know all about it, don't you? Because you've had it before". Onie sat down cross-legged on the ground with the dogs gathered around her. In that moment I was struck by the situation and was filled with the sense that I had only just grasped the perceived pervasiveness of "energy" and the ways that these perceptions affected relations between beings in this context. "I'm not sure I have the time, I've got another client later" Onie told the spaniel. "Oh OK. Come on, sit here" she tutted before massaging the dog's hips. "Oh dear, dear, what's happened to you today then? Did you have some trauma when you were getting clipped did you? Are your hips sore from jumping in and out of that van, are they?". She turned her attention to me. "Dogs will ask me. And it can take one minute. It could take half an hour. But I never ever push them away." At Epona "energy" flowed everywhere, through every living being.

Canguilhem explores vitalism through its status as something always refuted and obsolete, existing on the boundary of medicine and biology (now referred to as biomedicine) (Greco 2005). For Canguilhem, vitalism "was less a generalizable, 'positive' idea than a critical response to any form of thought that would reduce life to something non-vital and especially all mechanistic forms of

reduction" (Osbourne 2016, 189). As Canguilhem expressed, "the rebirths of mechanism translate, perhaps in discontinuous fashion, life's permanent distrust of the mechanization of life" ([1965] 2008, 73). Relatedly, I argue that the origination of the very context specific force of "energy" allowed my interlocutors a way of expressing the dynamic processes and relations shared between horses and people that some particularly reductive and mechanistic theories of autism did not allow for. Osbourne builds on Canguilhem suggesting "it is this critical aspect that gives vitalism its resurgent character, its own vitality, so to speak" (Osbourne 2016, 189).

The notion of vitalism's resurgent character fits well in the context of the data at hand. However, it does so also due to my interlocutors' increasing interest in dynamic systems and a holistic bodily vitality that reflect research interests within certain neuroscientific and therapeutic contexts. For example, vitalistic appeals to the powers of the invisible natural force of magnetism are being echoed in recent uses of transcranial magnetic stimulation (TMS), and not only in peripheral, uncredentialled spaces but also in highly regarded research departments with reports on websites from mainstream organisations such as the USA's Autism Speaks. TMS has been approved by the FDA for use in depression, and whilst it remains unapproved, is being used for schizophrenia, and now autism.

Another example would be electroconvulsive therapy (ECT), used for acute psychosis, affective disorders and catatonia, and increasingly being suggested as a promising treatment for autism (Dhosse and Stanfill 2004, Encticott et al. 2013). The vitalistic forces of energy and magnetism currently cannot be fully understood as always existing on the periphery of a bounded (bio)medicine, as something definitively obsolete. Indeed currently, there is significant credentialed (and uncredentialled) and popular interest in these forces as reflected in my interlocutors' reports. This is an interest produced in seeking new ways to apprehend the holism of soma and self, and strongly reflected in my interlocutors' responses, as this thesis has already explored.

Post-Cartesian studies of the material body tend to split into two camps; those that take as their focus the body as a passive, inert *object* of knowledge, and those taking the body as a lively *subject* of knowledge (Dewsbury 2000). In the ethnographic context here, as has been detailed, the sensorially enmeshed and energetic body acted as the conduit of being-in-the-world. This was not only the case for clients with autism as they moved through the world. Practitioners of equine therapy felt they could "tune in" to these flows as they learned to listen with the body, or "up" their "energy" to convey "intent" when leading sessions, or when riding or free schooling. In so doing they felt they achieved heightened sensitivities to the resonances of others; their clients, co-

workers and the therapeutic horses that they worked with. Not only this, they became sensitive to the particular environments that were perceived to be so fundamental to their clients' lived experience.

To fully appreciate the body as the subject of knowledge - as promoted by my interlocutors - requires that we open up our conceptualisation of materiality to acknowledge its liveliness (Malcolm, Ecks and Pickersgill 2018), activity, turbulence, excessiveness and energy. This is a focus much of the work on the nonhuman has side-lined. "As the subject of knowledge, the body is seen less as a tangible 'object' and more as a connective space, constituted through its linkages to other bodies, objects and settings" (Lea 2018, 5). This foregrounds the flows and connections that enact the body from moment to moment allowing us to add the "biological flow[s] of energy, matter, and stimulating chemical fluids" (Dewsbury 2000, 485) to our understandings. Energy is everywhere and scored through the body in the context of my field sites. For those that I got to know at Epona, energy was of the body; a form of bodily knowledge for practitioners and the animals who, as Onie put it, "knew they needed a massage".

By rethinking materiality, we allow reconsiderations of the lively, turbulent and excessive whereby "materiality is never apprehensible in just one state" but is instead "always already scored across states (solid, liquid, gaseous) and elements (air, fire, water, earth)" (Anderson and Wylie 2009, 332). I argue that this is necessary to fully account for the reports I heard. However, this approach necessitates the questions, *where* then does the body begin and end? and "*how* might the body be emergent through the co-implication of the flesh with the energetic, or the hormonal, or the affective?" (Lea 2018, 6). The first question has been explored in the context of the situated senses in Chapter 2, and the materially affective and vitally energetic aspect of the second in the sections above. The following chapter will continue to put my data in conversation with this question concerning the co-implication of the flesh, and also relationality, with the hormonal in more detail.

As detailed up to this point in the chapter, the term "limbic resonance" encapsulated my interlocutors' situated knowledge regarding transspecies, transcorporeal transmissions of bodily signals and affect. Through this, alongside a resonance afforded by a shared increased sensitivity to one's environment, horses were perceived to become therapeutic for autistic people. Before moving on to the next chapter, in the section below I show how overactive fight and flight systems were not considered as only shared between horses and autistic people. I show that they looped back to inform people's understandings of all humans experiencing extreme stress.

"We Have All Got Fight and Flight in Us": Fight and Flight as a Shared Property of Horses and Humans

Throughout my time at Epona and Pegasus the regional council was undergoing huge reorganisation. The streamlining and outsourcing of services were causing a great deal of distress for many affected parties in the area. The head of finance for the local council's social care and health department recounted her frustrations and concerns with its shift from council-run department to not-for-profit social enterprise. The council was providing fewer care services, with services being increasingly outsourced to third sector and private organisations. She was worried about losing her job in the process.

Whilst this held new opportunities for local charities, and new streams of funding – from direct payments made to individuals in receipt of disability benefits – it was also a source of instability and stress. For Verity, Thomas and others, being in charge of managing the funding and provision of the services they needed was difficult and stressful. Local special educational needs schools and council run care centres had decreasing pots of funding available for bringing large groups of clients for sessions, impacting Epona and Pegasus. Centres like this had to work hard to keep up with the change and to attract clients. The organisations had to be run more like businesses and less like charities, marketing themselves to individual families which now chose care provision from a range of suppliers, paid for with cash via the new direct payments system rather than through the procurement of the local council. At Epona, this new-found flexibility included finding new income through outsourcing space on-site for other small therapy organisations and care groups to operate.

The diversification of the centre had caused much anxiety within the team at Epona. Saffy, the centre manager, explained this to me as we chatted in Jenny's Lodge. We each took a seat on one of the two comfortable sofas that faced each other, interspersed with a coffee table offering a box of soft tissues and fliers displaying the array of treatments on offer. Saffy had just come from a meeting with Joe - a life coach, specialising in Neuro-Linguistic Programming (NLP) - who she hoped might also begin using Epona as a base for his work. Saffy discussed the changes she had been making to diversify Epona since I arrived in September. The centre had seen a range of new services being offered, with more planned for the coming months. These included equine therapy and learning, falconry, a growing pet pen with rabbits, chickens and, soon, pygmy goats. A local day service for adults with a range of learning difficulties and physical disabilities was now also based within the centre, offering the opportunity to work with the horses and small animals. This

group also opened a refurbished café for adults with additional learning needs to work in, within the riding arena – previously used by parents and carers as a waiting room.

Some of these new services were viewed by staff members as a threat to the identity of the centre, seen as decreasingly related to the horses that had been until now central to the work of the organisation. Lottie was in charge of horse welfare and had the greatest teaching load of all the staff. She had been particularly resistant to these changes, before quitting her job in May. "I did not realise we were some kind of fun park", she told me angrily over lunch a few weeks before handing in her notice. Saffy was contending with these issues, trying to get her staff on board with the changes, and to understand their motivations when they pushed back against them. "What's really become apparent to me as a manager is how within my staff [change] unsettles them", she told me. "So, I asked Joe today, 'why is that?' And he reminded me of something. He said, 'well the thing is, as you know, we've all got fight and flight in us"'. Saffy was well versed in the language of "fight or flight" and used it frequently to explain equine behaviour. Joe had "reminded her" that horses and humans shared this response to stress, mediated by the interrelated limbic and endocrine systems. "So, fight and flight is quite an old system, but we still have that inherent system in place […] A bit like horses, we're still like our ancestors, they've still got fight and flight in them haven't they?"

For Saffy, all people, and not only those with autism, were seen to enter into the 'fight or flight' response when challenged. Saffy viewed what she perceived as Lottie's resistance towards change at the centre in terms of a stress response, an expression of anxiety in response to the proposed changes to her working environment that she found threatening. Lottie was considered as insufficiently flexible to deal with the necessary changes Saffy was making to the organisation in response to a shifting care landscape. The new services were not only driven by need as defined by the disabled community who used the centre, but to keep it afloat in a context of drastic cuts to local authority and charitable sector funding. Importantly, the changes were seen as necessary to remain competitive in the marketplace emerging as a result of the shift to direct payments.

As Saffy understood it, Lottie's high anxiety levels were reflected in her obsessive focus on the stringent care regimes she put in place for the animals. Her tension and the work involved in keeping up with the level of horse care she demanded were having a significant impact on the other members of the team, including Verity who was responsible for much of the physical work. Saffy explained this to me one afternoon as she pointed to the clusters of neatly folded rugs and saddlecloths that sat in piles around the corners of the yard. "This is classic Lottie when she's stressed. Her anxiety levels just go brrrrrpppp. The rugs and grooming kits and tack start to pile

up, and I know. I've known her for over 15 years now. I can see it happening. She'll obsess about tiny scraps of stray bedding, or about washing all the horses' legs every morning. It's impossible". Lottie's anxious energies would leak, therefore, and be hard to contain. Not only would the equipment pile up, so too would the work of the yard. Trying to make life better and 'more natural' for the horses with this increasing number of services offered at the centre proliferating around her became increasingly difficult. Achieving the growing list of daily tasks, became almost impossible, only adding to her frustrations.

In conclusion, I have traced how the bodies and brains of young clients with autism were enacted in multiple, and at times contradictory ways. Steady states of homeostatic equilibrium were believed to emerge through AM practices, out of previous embodiments of sensorial flux. A model of a hard-wired and hierarchized limbic system, defined as "the oldest part of the brain" and which was understood to return the autistic body to a homeostatic equilibrium, coexisted with an atemporal brain in continual flux capable of processing "inputs" simultaneously, in parallel. Not only then, as the quote above suggests, were brains evolving, so too was the way in which they were conceptualised by the method founders, practitioners, and parents. By detailing these interplays between homeostasis and flux, sequential and parallel processing, and the simultaneity of "the oldest part of the brain" alongside its atemporality, this chapter has offered a link between the previous one denoting the sensorially and rhythmically mediated state that I have termed stillness in motion to the subsequent chapter which will go on to denote the inculcation of states of what I call mutability in stillness.

In the context of my field sites, all humans were considered to enter the "fight or flight" response when stressed. Those experiencing chronic anxiety that might emerge from a range of social or behavioural contexts or health conditions, not exclusively autism, were particularly prone to entering this state. So too were staff members like Lottie who were perceived not to be coping with the exponential changes I experienced at my time at Epona and caused by the shifting sands of available funding. Hence not just autistic people, but humans per se were seen to 'become animal'. To return the reader to the opening scene of this chapter when the notion of "limbic resonance" was made explicit this making equivalent of autistic people and horses by way of "limbic resonance", looped back to become a form resonance shared by all humans.

Horses and humans with autism were understood to share a particularly heightened "fight or flight response" as a result of a more sensitive limbic system. This reflects a crossing of thresholds: of animals 'becoming human' and humans 'becoming horse' by way of these perceived physiologies. Related to the energetic forces ubiquitously at play at Epona and moving yet further, 'in' to the

body and its flows, "limbic resonance" can be described as a transmission of affect (Brennan 2004), whereby energetic messages were sympathetically released and absorbed through the bodies of horses and humans. This underscored horses' perceived ability to "tune in", listening with and synchronising their bodies. A multispecies entrainment was suggested by these synchronised states whereby the circadian rhythms of clients, horses and practitioners enacted biofeedback loops and through which leaky bodies were brought into rhythm with one another. However, rather than moving "in" to a wholly self-contained "inside", this very particular system was enacted exactly by its relations with environmental forces "outside". Bodies were considered permeable to the biological forces and "pressures" of other bodies and intrinsically enmeshed in their environs.

Yet this was not to suggest that these bodies were wholly permeable or existed in states of continual emergence. Rather, the signals sent by clients for example carried communications relating to hormonal imbalances (of oxytocin, cortisol, adrenaline and so on) the result of chronic stress over time caused by human and environmental spheres designed without consideration for sensory idiosyncrasies so commonly experienced by autistic people. Ultimately these transmissions carried messages that were the result of a slow structural violence. "Energy" acted as a vital force imbricating the layers of matter together into an albeit unwieldy system of therapeutic efficacy. Autistic people are often thought to be more self-contained from the contagious affective resonances of others. To answer whatever the cause of this self-containment may be, whether in response to an oversensitivity to such contagious affects or an under-sensitivity to the signals of others, was not the aim of this chapter. Rather, by building on the previous chapters on synchrony and social time it has shown that through interacting with horses, autistic people were understood to become sympathetically entrained, enacting a kinetic melody through which they became biologically brought into synchrony with social rhythms.

This chapter has further fleshed out the argument that the material metaphors of "balance", "pressure" and "integration" were used to comprehend equine therapy as a way of calibrating the highly inconstant, dynamic bodily systems perceived to be involved in the autism-equine therapy nexus. I argue that navigating these aspects and holding their interplays in harmonious proportion was perceived to allow for kinetic melody - a bodily and relational synchrony – to emerge, thus enacting therapeutic efficacy, as defined by my interlocutors. The ability to change through these material layers of entrainment woven together by a vital energetic force was assumed of young clients with autism and formed the basis of the intervention. This understanding was underscored by practitioners' perceptions of a relative level of mutability in the bodies and minds of the autistic clients. "The senses", and relatedly a "fixed limbic system" were the grounds on which, through

tinkering with the flow of hormones oxytocin and cortisol, the person with autism could embody mutability in the form of neuroplasticity and behavioural change. This mutability, which indicates yet another ambiguous relation: between (hormonal) fixity and (bodily) flow, will be taken up in the next chapter.

To relate the above to the thesis as a whole I argue that "limbic resonance" is one of three particular bodily systems believed to be actively modulated by practitioners via the application of "pressure", finding "balance", and facilitating "integration". This phrase "limbic resonance" not only reflected the bodily processes believed to be involved in equine therapy, it encapsulated the symbolic link perceived to exist between horses and autistic people. I therefore refer to it as a symbolic mattering, the first of three detailed by the thesis. The proliferation of bodily systems and the at times contradictory conceptualisations of how they worked can be understood to reflect deep uncertainty around the condition of autism. Due to the uncertainty regarding the condition, autism is often invoked as a mirror on society, or at least a working space for the machinations of societal preoccupations. Ian Hacking and others have explored this mirroring effect of autism in reference to the neurologisation processes bound up in the decade of the brain (and beyond). I argue that more recently and in certain contexts, autism is becoming sensorialised and that AM practices are acting as a site of these looping processes in autism. Thus far I have detailed two niches that I argue are required for the enactment of this kind of autism I describe: environmental and behavioural. These substantiate the argument that AM practices are sites of looping processes in autism. This chapter on the limbic system and the next chapter on hormonal flows constitute the third and final of these niches: the physiological niche.

CHAPTER 6 - "Getting the Oxytocin Flowing": The Hormonal Flows of Multispecies Efficacy.

It was a cold, dry day in mid-December 2016 at the AM ranch in the USA. I was there to learn more about the method and its founders having followed AM practices from translations in the UK equine therapy context back to their source. As part of my fieldwork I was taking part in the AM training courses they offered alongside taking part in "playdates". These were weekend events; the only therapeutic sessions still being held at the ranch. It had increasingly come to operate as a training centre after Louis's son had no longer enjoyed having so many other families share the spaces he called home. I sat in the day room of the large farmhouse that had been gifted to the AM organisation with the others taking the course: Matteo, an Italian scoutmaster, Laurie, a psychology student from LA and Sandy, a member of the local city's education board.

Amy stood at the front and described the 'neurotypical' human "stress response system" before specifying it as different in autism. She told us:

> So, what we have with a stressed person is that part of the brain known as the amygdala is activated. You can think of the amygdala as the danger detector of the brain. Its role is to do with the fight, flight or freeze response. The first thing that happens is that your amygdala is activated. And the amygdala triggers the release of different hormones. The most well-known one is adrenaline. And adrenaline causes the physiological response in your body – causes your heart and respiration to increase, blood to be redirected to your muscles… But the amygdala also triggers the adrenal glands to release another hormone called cortisol. Which is the stress hormone. And what the cortisol does is narrow your focus. So that when you are trying to respond to this danger, you don't get distracted. [I]n people that are experiencing chronic stress, this is not what happens. And that is the case in most autistic people. The neurotypical sensory system processes information accurately – so if we go outside just now and it's windy our bodies will detect that, and we'll be fine with it […] We will know it's not dangerous. But a person with autism could go out there and could detect that wind as a gale force hurricane. At which point the amygdala is activated. Danger, danger, danger. Cortisol, cortisol, cortisol. At a certain point, if the amygdala is being continually activated, because of this malfunctioning sensory system, this person will start to experience too high levels of cortisol. So no longer is it only blocking learning for a short period of time. It is blocking it continuously. This is because these parts of the brain start to get damaged, so they stop inhibiting cortisol. They become less able to inhibit cortisol and the person basically gets locked into a negative cycle where it's basically impossible for them to learn anything. And this is what is happening in the majority of autistic people.

At this point Matteo asked, "does the brain get damaged forever?". Amy responded:

> Not forever, no. The brain is constantly evolving and if you can stop this from happening it will repair itself. We know now that the brain is very plastic. The brain creates new pathways and movement plays a big role in this… We know that the brain is plastic and that the brain remains plastic throughout a person's life. There is luckily a hormone which has been found to counteract the corrosive effect of cortisol in the brain and that is a hormone called oxytocin. Oxytocin is a hormone that goes by many names; the 'feel good hormone', the 'love hormone', the 'trust hormone'. It's a really nice hormone… [and] it

> also has the exact opposite effect on the brain as cortisol. So, what the oxytocin does is broaden your awareness. Which allows you to be open to and take in new information […] Oxytocin has also been found to counteract the corrosive effect of cortisol on the brain… The basic idea is that the cortisol is bad, and the oxytocin is good. Luckily, oxytocin is free [and] really easy to produce. One of the easiest ways to produce it is to ride a horse. Research shows that oxytocin is produced when you rock your hips... And that's why it feels so good to ride a horse. And the oxytocin is good […] If we have oxytocin instead of cortisol then the prefrontal cortex and hippocampus can start to recover which means they can start to inhibit the cortisol again, which means that the brain is being returned to that resting feeling, a safe space where the child can actually begin to learn.

To summarise, clients' "stress response" (explored in Chapter 5) was considered more reactive because of a "malfunctioning sensory system" (explored in Chapter 2). This over-reactive stress response system was understood to lead to chronic stress and relatedly high cortisol levels. The function of the "bad" hormone "cortisol", and the "good" hormone, "oxytocin", were directly related by Amy, and mobilised widely in the rationale now being used to support claims regarding AM efficacy. As Amy put it, "in a nutshell, cortisol is our enemy and oxytocin is our friend".

This chapter details an even more minute mode of efficacy promoted by my interlocutors than the previous chapter. My interlocutors understood that modulating the flows of "cortisol" and oxytocin via AM practices was integral to effecting neurological and relational mutability of clients with autism. I argue that in my interlocutors' understanding these hormones shared a direct relationship. The flow of these hormones was understood to require being held in proportion to produce states of "balanced" homeostatic equilibrium and allow for the bodies of clients with autism to become calmed. This was perceived to facilitate change in the person and their relations with others thus taking clients from spaces of "sensory integration" to social integration. This chapter engages with what I refer to as hormonal proportionality. It does so through the situated notion of clients' hormonal flows, and the ways in which AM was understood to modulate these. Ultimately it explores my interlocutors' perception that it was possible to change the mind through actions on the body. I will show that oxytocin held much symbolic power in indexing relatedness for the people I got to know.

This builds on the relational harmony perceived to be produced by balancing the proportions of three agencies: client, horse and practitioner, in each session and explored in Chapter 3. As Chrissie put it when explaining "finding the balance" between these proportions, "there's no constant". The chapter also builds on the related indeterminate simultaneities scoring through reports from the people I got to know and detailed thus far: finding a "balance" between "sensory integration" and "overload", "pressure" and release (as detailed in Chapters 2, 3 and 5) and relatedly homeostatic equilibrium and flux (in Chapter 5). In this chapter a final on-going interplay

of simultaneous stability (enacted through hormonal proportionality) and flux is explored. I show that this supports my argument that a simultaneity of repose and movement more broadly held my interlocutors' multifarious models of therapeutic efficacy and the material metaphors they were based on, together.

Building on the indeterminate interplay of movement and repose that I have established with the idea of stillness in motion in Chapter 2 on sensory issues, and the anchoring repetition of weekly sessions explored in chapter 4 on the importance of timing, I here explore what I propose to be an inversion of this indeterminate interplay: mutability in stillness. That is, once these spaces of stillness perceived to calm sensory issues via horseback movement through "the right environment" could be entered easily through weekly repetition and building of what were aimed to be harmonious attunements between horse, client and practitioner, this malleability, produced through hormonal proportionality, constituted a mutability in stillness. I show that this composed a third and final layer of rhythm linking these states of movement and repose as understood by my interlocutors; in its production of the expectation of the future in the shape of therapeutic goal of mutability. I will also argue that in my interlocutors' understanding, oxytocin acted as a transtemporal substance, linking these layers of rhythm and states of stillness in motion established in the chapter on sensory issues, with the mutability in stillness detailed here.

The Significance of Hormonal Proportionality

Autism is defined by a triad of impairment of 1) social interaction, 2) communication and 3) fixed interests and behaviours (APA 2013). Autistic people have been broadly characterized by inflexibility of thought, a need for strict routine, and a tendency for becoming "stuck". In DSM-5 (APA 2013) intense interests are referred to as "fixed", and unusual behaviours such as "stimming" are pathologized as 'stereotypy', implying that they are aimless.

The notion of mutability of the person with autism is thus relatively new and therefore of interest in the context of autism studies and the looping of autism. When addressing any kind of mutability, existing literature in the social sciences focuses on the shifting classification and the kinds of people defined as autistic (Hacking 2007, 2009a, 2009b). Whilst the classification-in-motion idea explores autism as a moving target and hence encapsulates the movement in the category, this applies to new populations of individual people, who engage and identify with the additional characteristics newly incorporated into the diagnostic category. This approach elides emerging notions of the lively mutability of the person with autism themselves and the ways they speak back to the classification used to categorise them.

Much of the autism literature within the social sciences focuses on neurological aspects, models and themes of the condition, for example topics such as neurodiversity (see Bagatell 2010, Davidson and Orsini 2013, Hart 2014, Ortega 2013, Silberman 2015) or neuroscientific knowledges and research (see Fitzgerald 2014, Orsini 2009, Ortega and Choudhary 2011) reifying the scientific focus on autistic brains to the exclusion of other systems of the body. By manipulating the body through horseback movements and environmental inputs practitioners felt that they were actively modulating hormonal flows through the blood. Through continual interventions, this included - yet was not isolated to – a long-term effect on the hypothalamic-pituitary-axis (HPA), the neuroendocrinological system considered responsible for processing the stress response. Therefore, whilst my interlocutors' explanations included neural processes, they were not isolated to them. They included interrelated processes of the body, such as the endocrine and immune systems.

Practitioners felt that modulating these processes had the effect of facilitating abilities in communication and learning, and ultimately, relatedness. As stated, at my fieldwork sites a highly embodied and emplaced mutability was seen to be enacted in somatic engagement with the 'natural', built and human environments at the centres. My interlocutors held a view of autism as a condition enacted in whole body engagement in the world. Paul and Chrissie, practitioners from the UK who I got to know well, had been taught this understanding when they trained in AM in 2012.

Contrary to wider public understanding of inflexibility, the autistic person was promoted by AM and its practitioners as capable of starting to "recover" and as embodying a related degree of malleability. Indeed, whilst they were perceived to struggle with change, clients were not perceived to be exclusively static and bounded, but as simultaneously capable of behavioural and neurological mutability. Once the person's sensory needs had been established by the practitioner (as explored in previous chapters), AM was believed to use the horses' calming presence and movement alongside a carefully choreographed environment and session trajectory to control the reactive limbic system of the person with autism. Of interest here, was a related control of the release of hormones in the body of the client; inhibiting the "stress" hormone "cortisol", and encouraging the release of "oxytocin", the "love" hormone. Once in this calmed state, with time, learning and behavioural change could occur. This modulation of hormonal flows and proportions was understood to be the mode by which neurological change could occur and facilitate a shift in the functioning of clients with autism.

Continued "stress states", caused by the sensory issues detailed in Chapter 2, were understood to release high levels of cortisol into the blood. This was thought to cause "shutdowns" where the person's focus was narrowed and resulted in soothing behaviours known as stimming. These

repeated releases of high levels of cortisol were understood to damage the hippocampus and pre-frontal cortex, leading to a reduction in the ability to inhibit the release of the hormone. "Oxytocin", on the other hand was understood to "counteract the harmful effects of cortisol production, broadening awareness, allowing bonding and absorption of the environment". Amy described the three most effective ways to elicit "oxytocin"; humour, squeezing, and rocking.

> Atalanta Method aims to cover all three options. Firstly, use humour at every opportunity, no matter how base. Secondly, in the back-riding position, you already have your arms around the torso of the child, in order for you to keep them secure and to reach the reins to control the horse. If the child is open to it, squeeze them wherever possible. Thirdly, there is an in-built rhythmic motion of riding on the horse, where the hips are rocked back and forth by the movement of the back to keep balance.

AM was perceived by practitioners to offer the means to reduce damage to the hippocampus and pre-frontal cortex, limit "meltdowns", and open up the autistic person to the sensory and social world around them.

"Because of the Oxytocin Being Produced": Tridirectional Reorientation and Multispecies Sociality

Through offering this opening up of the person, bringing these hormones into proportion was perceived to hold the potential for significant thickening of relatedness between family members. The following quote from Amy begins to detail this potential.

> And this is the main reason why it seems like riding horses is so beneficial for children with autism, because of the oxytocin being produced. oxytocin is… actually what kick starts labour. It's released when a mother or father holds their child, rocks their child. It's released when you breastfeed, so it's really important for bonding.

Via movement of the clients' body on horseback then, oxytocin flow was mobilised as key to sociality and bonding, and I tentatively suggest, of enhancing relatedness between kin. oxytocin was 'the good hormone' and understood as a subjunctive substance which not only repaired the brain and facilitated learning, but which held the promise of enhancing sociality and relatedness.

After sitting listening to Amy talk for quite some time I was relieved when she announced a practical session. "Right pair up in twos everybody. We're going to do the diaper shake." Amy paired up with Laurie and asked her to lie down on her front with her hands by her sides. "I'm going to place my hands at the sacrum at the base of Laurie's back and rock in rhythm". She rocked Laurie like this for a few minutes before getting us all to do the same in pairs. "This is a great thing to do with the mums and dads, on or off the horse. It's really relaxing for them and it's so important to involve them", Amy told us.

As part of our training that day, we were also to try sensory work ourselves, so that as Amy put it, we could "feel with our own body just how great it feels to be up there bareback on the horse". We gathered and nestled at the door, each getting our boots on before heading out to the stables. Sensory work was encouraged at every opportunity, and not only for practitioners but volunteers and parents too. For Louis, the benefits of sensory work were not isolated to autistic people. He told me, "It's good for all of us. We also do it with the parents because autism parents are stressed". Getting parents up on the horse, and "getting the oxytocin flowing" was seen as central to effecting a sustainable change for the child – and constituted a tridirectional flow of the effects of oxytocin between parent and child, via the horse.

However, Louis was all too aware of how sensitive parents could understandably be. To protect parents from feeling any application of blame, AM concealed some of the motivations behind getting the parents up on the horse's back. As the horse was prepared for us, Amy explained:

> [Parents] are overwhelmed and we know that this is something simple and easy we can do to reduce those stress levels. We sort of trick them into doing it by telling them we want them to feel what their child is feeling. And by telling them that if their child is a bit reluctant to ride then seeing them (parents) up on the horse will maybe make the child view the horse as a safe place to be. That's all true by the way. But the main reason is to try and do something to reduce the parents' stress levels. Because if we can send the parents home less stressed, then that is going to have a much bigger effect than just spending an hour or two with us once a week. Because they are with their parents all week. And there is research that shows that the parents stress level has a big impact on the child's learning outcomes. You know yourself that if you are stressed then the child is going to pick up on that.

Danny gave each of us a leg up onto Chico's back in turn. He stood by as we first lay forwards over his neck for a few minutes before sitting up, and lying back, facing the roof of the stables with our backs on his. We talked about how this position left us feeling open and vulnerable, relying on us placing a good deal of trust in Danny's ability to keep the horse still and catch us if we fell. We then sat up and changed direction to face backwards and lay forwards with our front over the horses back and rear.

After each taking a turn relaxing on the horse's back for a few minutes the session ended, and we made our way back over to the ranch. The ground was frozen hard, and wrinkles of mud crumbled underfoot as we made our way along the path through the trees back over to the ranch. We took the path through the trees, past the corrals of restless stallions and honking geese and piled inside. After sitting down, we got chatting with Louis about the differences between the TRAD and AM methods. The following excerpt highlights his situating of autism not only in the brain but across multiple domains of biofeedback between the whole body and the environment:

> If you go to your average TRAD place and you say, 'OK you've got someone with a brain nervous system issue, what's your strategy with the brain?'. And it's a little bit like taking your car to the mechanic for an oil change. And them saying "Oil? Never heard of it". And the reason is that TRAD was designed for physical disability. And it's very good for that. And they should use that methodology. It's good for that, it works. But there is this idea now that the brain and the nervous system is a different animal. So, you have to understand the cell danger response, the amygdala, cortisol, how that works. And then the first thing you have to do is calm that down and keep that calm. So, when you lose that balance, how do you retrieve it?

Whilst initially it might appear that Louis's references are to neural processes, on closer inspection Louis not only refers to the central nervous system of the brain and spinal cord but also peripheral nervous system, and its interrelation with the immune system and "cell danger response" in situating autism.

The danger response theory is a somewhat controversial approach to immune responses of the endocrine system and its relation to the environment proposed by Polly Matzinger and colleagues in the mid 1990s (Pradeu and Cooper 2012). The cell danger response constitutes a shift from the self/non-self theory. Briefly, self/non-self theory holds that on a cellular level the body holds a consciousness of self, and correspondingly that the immune system is activated in response to threats external to the body which it encounters as non-self. The danger response theory shifts this view, suggesting instead that immune responses are not due to the presence of non-self, but the emission of danger signals from *within* the organism.

The development of this recent – and peripheral - theory of immune responses is of great interest, however it is unfortunately out with the scope of the thesis to explore it in any depth. Suffice to state that Louis's and thus AM's situating of autism was highly distributed across multiple and increasingly minute domains of the material processes of the autistic body. In referring to the cell danger response Louis makes clear that he situates autism as a condition of the whole body, enacted not only in direct brain functions, sensory and limbic systems or even the minutia of hormonal flows, but down to the processes of each cell of the body.

To return to the hormonal flows that form the subject matter of this chapter, horses were central to how practitioners believed they could enhance the production of "oxytocin". Louis explains that his choice of Spanish dressage horses over traditional riding school horses for his therapy sessions was based upon this rationale:

> What makes us different is that we did not start the dressage because we want to be dressage people, we started the dressage because we noticed a connection between collection [of the horse in a rounded, bouncy canter] and oxytocin and learning in the kids. So, then we had to get serious about it… It was not me saying 'I've got these clever

> ideas about oxytocin and cell danger response' and so forth. It was just that we noticed what worked and what did not. When we back ride, we can ride at a walk trot and very collected canter. And some of our horses are even trained in the *terre a terre* canter - basically a canter on the spot - where the horse is doing a really big movement at that point. So, the kids are really getting their hips rocked, producing the oxytocin which we know is a really good thing.

This collected canter was understood to be integral to eliciting the highest volume of "oxytocin". Great lengths were thus taken to ensure that as the child grew older, they could still ride the horse during this movement. Long-lining allowed the practitioner to get the animal into the extremely collected canter from the ground. Louis felt the need to distinguish himself from TRAD practices and particularly leading the horse from in front. This, he believed, would make the horses movement flat and ineffective. "When people get too big to share the saddle with us we still want to give them the oxytocin effect. We don't want to pull the horse by the head, because that will have the opposite effect. So, we use long reins".

It is important to note here that Atalanta's horse training methods were based in this classical dressage philosophy. This could be loosely understood as being more similar to traditional Anglo-Irish methods, than the Western riding prevalent in the USA, and vastly different to the methods of natural horsemanship (NH) increasingly used at Epona with its appeals to egalitarian relations with horses. Whilst the training of most of the horses at the AM ranch was in classical dressage the equipment promoted by Atalanta for therapeutic sessions was a Western saddle and bridle. They also had two Western trained horses that were also used for a good deal of sessions. Whilst incongruous in terms of training, this was chosen to allow space for the practitioner to back ride, and for the child to be secured between the pommel and the practitioner, maintaining safety as the triad increased through the paces and up to canter[28].

Suffice to say, the method was designed through bodily modulations to actively engage with and shape the mind and nervous system of clients through the body, distinguishing it from TRAD sessions which he felt were designed around "physical disability" (traditionally understood to exclude disabilities considered "mental" such as learning difficulties, autism, or mental health conditions). These very particular methods and equipment were chosen to enhance oxytocin release which in turn controlled or "inhibited" the release of cortisol, which allowed the child to remain 'open' to the human and physical environment. As Louis told me, "once you've got the brain in that oxytocin phase, and you are doing certain kinds of movement, you are opening up

[28] Chrissie had debated the use of a Western saddle and bridle with Louis. She argued that a) she could not find a Western saddle short enough for her short-coupled horse, Sylvan, and b) the children benefitted from the heat and sensory input from the movement of the muscles on Sylvan's back. Louis had agreed that she could use her choice of equipment, a soft, flexible, shearling pad with a pommel.

the learning centres of the brain". As Louis suggested, echoing Amy in our training sessions, this process only occurred when riding an extremely well-trained horse, such as his Spanish dressage horses.

Here it is useful to refer to the development of the relationship between Frankie, Chrissie, and Sylvan in Chapter 3. Chrissie noted how Sylvan had begun to heed Frankie's communications before she intervened. He responded to Frankie's commands first, ultimately "cutting her out" of the equation. A well-developed form of embodied co-respondence between horse and rider thus had to be developed before the full benefits of riding could be felt by the client. This was of course a smoother process with a highly trained, or indeed mature and quiet animal that spoke back in subtler ways to the practitioner and client. Fast, jumpy unpredictable movements of a less well-trained horse could cause stress, activating the cell danger response, limbic system, HPA axis and relatedly the release of cortisol.

To summarise this section, as explored in previous chapters, "sensory work" was perceived as central to the efficacy of equine therapy. As Amy told us "with AM we can directly target the child's sensory system". However, this was multifaceted, and AM was understood to "do more than just reduce the bad [cortisol] and increase the good [oxytocin]". This "more" Amy referred to was a more pervasive mutability of the person stopping "brain damage" resulting from chronic cortisol release - and allowing for brain repair and learning through the release of "oxytocin". Neuroplasticity was promoted as one correlate of this mutability amongst others which mapped onto the situating of autism as a whole body rather than neurological disorder by AM. Mutability occurred via fully embodied and emplaced processes whereby alterations in the pathways and functions of the brain and abilities for relatedness were facilitated through acting on the body.

AM was understood to facilitate this process by manipulating hormonal flows through the body via the blood. Once a range of "bad' environmental "triggers" had been dampened, back riding provided not only the rhythmic movement and sensory contact of the horse, but "deep pressure" from contact and squeezing from the practitioner riding behind the client. Combined, these were believed to incrementally increase the flow of "oxytocin". Indeed, by encouraging back-riding, and particularly at a rounded canter, with its rocking movement and enhanced bodily contact with both horse and practitioner AM was promoted as the best possible way to enhance oxytocin flow.

Practitioners and their horses were thus understood to provide an eventual and persistent change in the hormonal flows of the child, a correlate of a more sustained shift in the behavioural and emotional functioning of the client. Developing an effective embodied harmony between the triad

of horse, client and practitioner, and relatedly a comfortable riding experience, with as much hip-rocking as possible, was central to the release of oxytocin and the inhibition of "cortisol". Louis's highly trained dressage horses, with their ability to canter on the spot and offer what they saw as a tension free experience (for the rider) were promoted as the absolute zenith of efficacy. The outcome of providing "more" was not only aimed at reorientation of the client, but also included a modulation of the hormonal flows of caregivers. Indeed, as explored above in relation to encouraging parents to take part in sensory work and "get the oxytocin flowing", providing clients with a sustained improvement in relations with others was dependent on doing so.

The above section has introduced several aspects of what can be understood as substances of embodied multispecies sociality. I will discuss these below in relation to the associated literature. First, I discuss the enactment of a hormonal triad in the construction of autism, its causation, neurological underpinnings, and related potential for amelioration by equine therapy. Secondly, I address the literature on bodily substances and their power to simultaneously denote fixity and flow in processes of sociality and relatedness. I move on to discuss a multispecies relatedness between horses, practitioners, clients, and parents that these hormonal substances allow for. I conclude that my interlocutors' notion of "oxytocin", in linking between indeterminate relations of stillness and motion and mutability in stillness, can be understood as a transtemporal substance of mutability.

Hormonal Flows

A triad of hormones produced by the limbic system are commonly mobilised in biomedical understandings of autism (Baron-Cohen 2002): testosterone – commonly considered in popular culture to be 'the male hormone', oxytocin – 'the love hormone', and cortisol - 'the stress hormone'. Whilst entering into the autism nexus more recently, oxytocin has been widely implicated in parent-child, and most often mother-child bonding, evidenced by a proliferation of popular science and news articles such as 'Love hormone improves mother child bond' (Brit 2007). oxytocin is a compound released by the brain's hypothalamus into the liquid flow of the blood stream by the pituitary gland. It is understood to be central to kin making processes of reproduction; conception, birth, and breast feeding. It is conceptualized as central to milk production and let down and transported between mother and child through the mother's milk.

Of interest here is the gendering work oxytocin does for considerations of parent-child attachment. These articles predominantly refer to mother-child bonding. Rarely does one come across articles noting that oxytocin improves the parent - or father - child bond. Indeed, a review

of the scientific literature shows that very little measurement of oxytocin in the making of fathers exists, with any mention of oxytocin in relation to men being in the context of conception only. As with testosterone, oxytocin exists in the bodies of both men and women and is implicated in male bonding processes. However, oxytocin has been bound up with womens' bodily processes and particularly reproduction from its discovery when its name was derived from the Greek for 'rapid birth'. The association of this hormone - which is constructed as particularly female - with attachment and bonding in autism arguably contains remnants of the 'refrigerator mother' theory of autism promoted by Bruno Bettelheim (1967) and others at the height of psychoanalytic psychiatry.

We should not be surprised when fragments of old scientific theories are folded into new ones, or when new theories remain occluded and unabsorbed into mainstream science (Roberts 2007). If you will pardon my paraphrasing of Roberts, it is through the crumpling of eras of time (and scientific theories) that vital bodies are produced via the pleating and cross-cutting of biomedical fields and knowledges. Roberts has suggested that we "need a history of hormones to see how this history is folded into present endocrinological and biomedical science" (Roberts 2007, 49). However, approaches to exploring what is at stake in our understandings of hormonal flows have focused almost entirely on sex hormones (see Appleton 2018, Bärnreuther 2018, Bell 1987, Hoberman 2005, Liboiron 2018, Marks 2001, Oudshoorn 1994, 2003, Roberts 2002, 2007, 2018, Sanabria 2016, 2018). Whilst it is out with the scope of this thesis to do so, I suggest that as publics engage with and find meaning in the complexity of the hormonal body we should now extend this history - and the question of what is at stake therein - beyond sex hormones to the cascades of other hormones involved in our most basic of bodily processes.

Without room for a full exposition of the gendering of oxytocin – a hormone perceived as particularly central to autism - it is sufficient to note that hormonal flows, and particularly flows of "oxytocin", are of interest in autism, a condition characterised by issues with attachment and relatedness more broadly. Whilst being unsurprised we must consider, with a nod to Donna Haraway, how it could have been otherwise. I suggest that in a similar sense to sex hormones, the hormone oxytocin can be understood as an "embodied fact" (Haraway 1997, 39). Suffice to note, I suggest that hormones, alongside neuroplasticity, have been taken up by my interlocutors in their notions of therapeutic efficacy and enactment of a sensorially mediated autistic body-self-world. The flow of oxytocin and "cortisol" were understood to have to be held in proportion with one another to produce a "balanced" stability of body and mind, and ultimately, to facilitate relatedness with other people. This was one of the main goals of the intervention with the hope

of teaching young people the communication skills necessary for self-advocacy and ultimately a fulfilling life in the future.

Symbolic Matterings: Oxytocin as a Material and Symbolic Substance of Relatedness

"Oxytocin" is a chemical compound released by the hypothalamus into the blood stream by the pituitary gland. It is carried through the blood and highly mingled in processes of reproduction; conception, birth, and the production and let down of breast milk as highlighted by Amy's comments. As such it holds much symbolic power. As a material compound flowing through blood and milk, it simultaneously indexes the fixity of materiality, reproduction and genetic inheritance, and flow in its liquid form. Anthropologists have relatedly shown that the bodily substances of milk and blood denote the reproduction of genetic inheritance and perceived stability of materiality, yet also flow and malleability (Carsten 2011, Copeman 2018). Here I have focused on oxytocin and the relatedness its presence - or lack thereof – is perceived to enact between children with autism and the people they share their lives with including parents and carers.

I suggest that in my interlocutors' understandings the hormones oxytocin and cortisol hold a related material and symbolic tension between both stability and mutability. This is so in a range of ways. Firstly, cortisol was understood to make autistic people become "stuck" or "fixed" in repetitive behaviours, closing off the "learning centres in the brain", and foreclosing change. In contrast, oxytocin was seen as a facilitator of "neuroplasticity", learning and relatedness. These hormones were understood as directly related however, and unable to be viewed in isolation. It was through effectively balancing "pressure" and release and inculcating a delicate balance of "sensory input" and "overload" that practitioners could produce homeostasis in the nervous systems of the body – a state that I have called stillness in motion. This homeostatic balancing and stability provided states in which the hormones oxytocin and "cortisol" could be rebalanced and brought into proportion. This was the means through which behavioural and relational change – or flux - could occur. I term this multi-layered and inverted interplay of movement and repose, mutability in stillness. In the context of horseback therapy then, via the horse, these hormones were understood to act as powerful material mediators of malleability in autistic clients, shifting them towards new forms of sociality with others.

This thesis seeks to detail how my interlocutors understood sociality and the symbolic as inextricable from material realities. Equine therapy was not understood to enhance communication and social skills in abstract, intangible ways. It was perceived to do so by

modulating bodily processes, even down to the minute flows of oxytocin in the blood. As intimated in the title of the thesis, these were practices that mattered, and in both senses of the word. I relatedly suggest that my interlocutors' notion of oxytocin and its effects (themselves reflective of wider framing of the hormone) held not only the power to effect material changes in clients' bodies, but much symbolic power. I therefore suggest that oxytocin represents another of what I have termed symbolic matterings. I expand upon this notion again below in reference to neuroplasticity. As I will show neuroplasticity and the kind of materiality indexed by it also holds much symbolic power in the context of autism more broadly.

"The Brain Is Very Plastic"

The following section explores the significance of the malleability these hormones were understood to produce. In the seminal Flexible Bodies (1994), Emily Martin juxtaposes American understandings of the body's defence systems in the 40s and 50s with the 90s in answer to Foucault's call to disrupt those things we now take as "self-evident, universal and necessary" (Foucault 1991, 76). In so doing she asks the question of "how our taken-for- granted-ness about the body is generated?" (xiii). Here I ask, what is taken for granted in my interlocutors' notion of the mutability of autistic people by way of modulating these hormonal flows? On a basic level, autistic mutability was related to an understanding of the brain as a morphable entity. However, whilst referring to the brain's potential for mutability via the literature on neuroplasticity it was the *situatedness* of the brain and hormonal flows through the body that emerged most strongly from my interlocutors claims.

The uptake of the concept of neural plasticity in AM is not given primacy but is instead folded into considerations around the potential for the mutability of the person via the modulation of a range of properties. These modulations were of "the right environment", levels of "sensory integration", synchrony in social time, expressions of "intent", energetic and sympathetic transmissions of bodily signals and affect, and in focus in this chapter, hormonal flows. This ability for change in self and soma in clients with autism is interesting in the context of autism – and can act as a lens to explore wider perceptions around autism and relationality. AM relied on the action of "cortisol" and oxytocin to provide a level of scientific authority to the claim that it helped alleviate some of the difficulties faced by people – mostly children - with autism. These hormones were enacted within the research sites as powerful modes of behavioural change – and mutability - within the person with autism.

However, for the autistic people I got to know equine interventions could not change them. As Thomas made clear, "what people need to understand is that nothing changes about your autism from when you are little to when you grow up. The sensory problems and social problems and stimming are all there. You just develop better coping strategies". And so, whilst the mutability afforded by changes in hormonal flow enacted by the sessions promoted a more positive view of the autistic person as more flexible and adaptable than prior conceptualisations, it is necessary to examine the consequences of this valuing. As Martin suggests:

> It is no wonder that moving as gracefully as an agile, dancing, flexible worker/person/body feels like a liberation, even if one is moving across a tightrope. But can we simultaneously realise that the new flexible bodies are also highly constrained? They cannot stop moving, they cannot grow stiff and rigid, or they will fall off the "tightrope" of life and die. We need to examine carefully the social consequences of these constraints…. The challenge is to sustain our critical perceptions in a culture that prizes being flexibly adaptive without allowing our perceptions to become so flexibly adaptive that they can only compliantly perpetuate - instead of calling attention to - the order of things. (1994, 247- 249)

Building on Martin's exegesis of flexibility and inspired by the discovery of neural plasticity within the neurosciences, some scholars have recently begun to use 'plasticity' as a conceptual framework for exploring neural and related bodily malleability with varying levels of critical engagement with the scientific literature (See Sanabria 2016, Rees 2016, Pitts-Taylor 2010, 2016, Malabou 2008).

In acknowledging the tapestry of models of the body and efficacy woven by my interlocutors, whilst I refer to their use of the idea of "neuroplasticity" I do not follow recent scholars in taking up the concept as heralding an entirely new era in human history, via either a paradigm shift in how we understand the human being or the brain as a concept in motion (Rees 2016), a conceptual tool to highlight the fluidity of sex (Pitts-Taylor 2016, Sanabria 2016), a panacea for the ills of neoliberalism (however it is defined) or illustrating the inseparability of materiality and consciousness (Malabou 2011). I suggest that the ready uptake of theories of neural plasticity into both popular understandings of the brain, and social scientific theory positing the human as almost entirely plastic (Rees 2016) and flexible, is arguably a case of what Martin (1994) refers to as "compliant perpetuation" that requires more critical examination. "Neuroplasticity", as with oxytocin (and "cortisol") can be understood as an "embodied fact" (Haraway 1997, 39) and in my terms, a symbolic mattering.

My interlocutors - whilst giving form to their own mutability by way of a fixed limbic system and individual sensory and behavioural particularities - were being actively moulded into more communicative beings in flux as a result of the sessions. As explored in earlier chapters the relations of dominance and domestication inherent in the AM method and equine care practices

in focus always recurred and cannot be elided. Attempts to move away from these unequal power relations towards more egalitarian and sympathetic engagements with clients – and horses - were the subject of intense concentration, discussion and work, precisely because of their ubiquity. This active moulding of clients into more communicative beings was productive of new forms of sociality between clients, horses, practitioners, and later, wider circles of social others.

"Oxytocin": A Transtemporal Substance

The right proportion of "cortisol" and oxytocin were central to the efficacy of the sessions. Yet it was the "friend" hormone oxytocin that became particularly synonymous with the positive aspects of sociality and relatedness that developed over the weeks, months and years of sessions. As explored throughout the thesis, therapeutic rhythms conjoining inverted relations of movement and repose linked the material metaphors that scored through models of therapeutic efficacy promoted by the people I got to know. The first was the rhythm of horseback movement detailed in the chapter on sensory issues. A second layer of rhythm linked between weekly sessions over months and years. Moments of stillness in motion were inculcated by "being in the moment" and "tuning in" to the momentary needs of clients, calming sensory overstimulation by choreographed horseback movement.

These moments could only be achieved through practitioners' being able to simultaneously "tune out" allowing them to reflect on successes and failures of past sessions, whilst simultaneously thinking ahead to future therapeutic goals as defined by the method and parents' wishes. Practitioners inhabited both retro- and protospective contemplations in these moments in ways not dissimilar from the task of the ethnographer. Notions of immanence and emergent synchrony (and asynchrony) allowing us to explore these moments do not therefore fully characterise the encounter. The extended periods of time client, horse and practitioner spent together allowed for the development of these complex systems of tridirectional communication, "finding the right pressure" and intuiting the thresholds between "positive sensory inputs" and "sensory overload" in clients through "listening" with increasingly fine-tuned whole-body awareness. These were perceived to facilitate the mutability of the client in a process of what I have called mutability in stillness.

The temporal distances between a client embarking in equine therapy for the first time and the point at which, if ever, they ceased attending was a significant factor in the depth of therapeutic efficacy that could be achieved. Whilst quickly able to calm surface sensory issues simply by being outside and moving through a "good" sensory environment on horseback, it was only by way of

the anchoring repetition offered by these significant periods of time that the correspondences and resonances required for more sustained improvement in the symptoms of the client could be established. In so doing they afforded mutability deeper 'in' to the systems of the body. The therapy was perceived to operate, therefore, in multiple temporalities, and also across temporal registers; both simultaneous and extended, interrelated rhythms of time.

Relatedly, throughout the thesis I have acknowledged and promoted the importance of spatiotemporalities in AM practices. Movement through space in moments of temporal stillness, and the inverse, and through parts of and whole bodies, as detailed again briefly above, were key. For this reason, whilst I mainly refer to rhythms of time, I have not entirely jettisoned spatial references to temporal 'distance'. In the context of my field sites, whilst selves were extended into and enacted by the sensory environment and interiority and exteriority were fluid entities, due to the import of movement through these environments, and of parts and wholes of bodies held in proportion, space could not be explained as collapsible into time in this context. oxytocin was understood to be released in initial sessions of the therapy, increasing in volume with each successful session and in so doing affecting parts of the person in layers of sensorial, immunological, hormonal, neurological and even cellular mutability as well as relatedness of the whole person. As such I argue that oxytocin as evoked in my interlocutors' reports is well understood as a transtemporal substance linking these temporal registers which both collapse and yet rely on temporal extensions and distances.

To begin concluding this chapter I summarise that 1) inhibiting the release of "cortisol" through addressing the sensory issues of clients and 2) "getting the oxytocin flowing" during horseback sessions were understood to provide a chemical basis for the neurological and behavioural "opening up" of young clients to what was understood by practitioners and parents to be more meaningful correspondence with those around them. In so doing these hormonal flows constitute this thesis' most finely grained level of analysis. I have shown that local understandings of oxytocin and "neuroplasticity" constitute what I called symbolic matterings. These are at once powerful material and symbolic substances of multispecies relatedness indexing the ways in which autism is understood as a sensorially mediated whole-body, rather than purely neurologically based condition of the soma and psyche, and one enacted through inhabiting social worlds.

The mutability that these hormonal flows facilitate is predicated by my interlocutors upon an understanding of the situated person as highly mutable. This mutability is operationalised in moulding people, and mostly children with autism, into more communicative beings by acting on the lively and spatiotemporally situated body. The uptake of scientific theories around both

hormonal flows and related neuroplasticity by practitioners of unregulated therapies require exploring with a "wondering ambivalence" (Mackenzie and Roberts 2017, 137). This ambivalence sits at the crosshairs of a tension in this context between on one hand, a slender optimism about neuroscientific knowledge and potential new approaches to therapy and, on the other an awareness of a newly emerging autistic biological citizenship centred around sensory issues. This wondering ambivalence is reflected in my reticence to focus only on the metaphorical aspects of my interlocutors' references to the materiality of the body.

The application of this property of autistic mutability through careful choreographing of bodies and affective energy is interesting yet complex, which I explain here by making two points. Firstly, it appears as a breakthrough from prior perceptions of the restricted abilities of autistic people. These are exemplified by the various reincarnations of the autism diagnosis since it entered the Diagnostic and Statistical Manual in 1980 (including today's version), in the work of Baron-Cohen in his theory of mind (Baron-Cohen, Leslie and Frith 1985) and mindblindness theories of autism (1995). More recently, this notion of the plasticity of the person - and neural plasticity in particular - has been taken up somewhat uncritically by scholars such as Catherine Malabou (2008), Victoria Pitts-Taylor (2010) and Tobias Rees (2016).

I suggest that we must remain aware of the practices of exclusion and discrimination against those found lacking in this property of mutability. Equine therapy appears to act as an inclusive force viewing the person as more capable of flexibility. Yet, a balanced examination of the practice of the therapy requires a simultaneous awareness that this push to flexibility is just as bound up in the production of forms of dominant, normative behaviours and ways of being in the world that excluded autistic people for their inflexibility.

The autistic person who struggles to maintain control of shifting sensorial worlds and lives in flux between partial, fleeting states of equilibrium aims for rigidity, inflexibility, and routine as a route to much needed stability in her or his environment. No matter how flexible autistic people may be perceived to become through therapeutic intervention, equine therapy clients still exist in tension with a drive towards the ability to "dance" across a "tightrope". And so, whilst acknowledging the ability for autistic clients to become flexible enough to facilitate better functioning in the social world, we must remain critical of over-applying this at first appealing capacity of mutability. This is especially pressing in light of reports from the autistic people I got to know regarding the import of coping strategies rather than neural change. As Thomas told me, "nothing about your autism changes… you just develop better coping strategies".

Firstly therefore, we must be critical of the highly constraining force of any push to flexibility, and secondly of the broader exclusion of those whose bodies resist all therapeutic attempts to make them flexible, such as those whose bodies do not respond to equine therapy. Indeed, through the practice of equine therapy a particular kind (Hacking 2007) of autistic person is enacted, one who is understood to experience complex sensory symptomatology and hold the potential to be made more flexible by the intervention. Whilst widely reported within the autistic community, this will not be the case for everyone with autism. As the saying I heard repeatedly from my interlocutors throughout my fieldwork goes, "when you know one autistic person, you know one autistic person".

In the context of my field sites relationality was constituted by the flow of oxytocin in particular, the direct result of its enactment as a transfiguring force. oxytocin can be understood as a transtemporal substance acting in multiple registers through rhythms linking spatial inversions of moment and repose, and temporalities of past, present and future. To reiterate, these are 1) the momentary spaces of calming, rhythmic horseback movement 2) the anchoring rhythm of weekly sessions, and 3) a rhythm produced by the expectation of achieving therapeutic goals in the future.

This chapter has contributed to the anthropology of the body by drawing our anthropological analyses further 'in' to the micro level of hormones coursing through the blood. I have appreciated the significance of materiality in my interlocutors' view yet maintained a focus on asking what is at stake in these particular mobilisations of materiality in models of therapeutic efficacy. I suggest an extension of the anthropology of hormones, which until now has focused primarily on sex hormones. In combination with the other chapters of the thesis it contributes to literatures in critical autism studies, by acknowledging the situating of autism as an increasingly sensorially-mediated condition of the whole body in its worldly inhabitation. That is, even down to the minute flows of hormones in the blood, and responses at a cellular level.

However, this is not to blindly assume the truth value of my interlocutors' claims. I maintain a cautiously critical eye on their sensorialising of the condition. I argue that these aspects constitute new developments in the looping of autism and reflect broader societal uncertainty around the working of mind-body-environment interactions outside of the autism – equine therapy nexus. This and the previous chapter have detailed what I call the physiological niche consisting of the limbic and endocrinological systems of animate living bodies. I have argued that this was co-constituted by humans and horses in the context of equine therapy. I have shown that this co-constituted physiological niche, in concert with the environmental and behavioural niches detailed in Section 1 (Chapters 1 and 2) and Section 2 (Chapters 3 and 4) of the thesis, enacted by the

practices of AM, are facilitating the emergence of a sensorially-mediated kind of autistic person. This chapter has looped the symbolic mattering of oxytocin back full circle to the release of the hormone through initial sensory work practices detailed in the opening chapters. I will now move on to conclude the thesis.

CONCLUSIONS

Preparing to leave the field and move back to Edinburgh to begin writing up was a lengthy process of saying goodbye to the clients, parents, teachers and practitioners I now knew so well. During an evening out arranged as a send-off from Epona, Chrissie handed me a gift. It was a framed print from Lewis Carroll's (1865) *Alice in Wonderland*. On the print was a black and white drawing of Alice looking up at the Cheshire Cat as it lay on an overhanging branch. It read, "'We're all mad here. I'm mad. You're mad" said the cat… 'How do you know I'm mad?' said Alice. 'You must be' said the cat, 'or you wouldn't have come here"'. At the time I found the print humorous. It echoed the oft heard Epona saying "you don't have to be mad to work here, but it helps" and relatedly the team's collective belief in a spectrum of madness and sanity, health and ill-health. I was touched by their perception that I be included in the madness of Epona.

After returning from the field and writing up, it struck me that Alice's bewildering journey through Wonderland offered an allegory for the journeys I took through my interlocutors' situated biologies of autism and related notions of therapeutic efficacy. I was introduced to expanding and contracting scales of bodily systems in their worldly inhabitations and the dis/harmonies of parts and wholes therein. The gift also encapsulated the uncertainty faced by my interlocutors in understanding the kaleidoscopic condition of autism and the related proliferation of ambiguous simultaneities expressed and experienced via a range of materialities that held much semiotic force in my interlocutors' explanations of therapeutic efficacy. These included: horseback motion and sensorial stillness, "sensory overload" and flux, and "sensory integration"; bodily and behavioural "pressure" and release; "balanced" homeostasis of bodily and interpersonal systems, and flux; hormonal and behavioural fixity and neurological and communicative mutability.

I have shown that notions of bodily "integration" and disintegration, "pressure" and its release, and being in and out of "balance" emerged as corporeal frames extending from therapeutic sessions. These can broadly be understood as indeterminate simultaneities of forms of movement and stillness. These material metaphors were central to local notions of therapeutic efficacy and were used to comprehend equine therapy as a way of calibrating the highly inconstant, dynamic environments, and sensory, endocrinological and neurological systems of the body perceived to be involved in the autism-equine therapy nexus. I have shown that these notions were scaled up by AM practitioners to understand the potential for the therapy to produce better "social functioning" in clients. "Sensory integration" led to social integration. "Deep pressure" and "finding the right pressure" acted as means to pressure clients towards this broader goal of social integration. Homeostatic bodily "balances" led to harmonious proportional "balancing" of beings

in relations of sociality. I show that vital forces of "energy" and "intent" were bound up in these models and were understood to score through these environmental, sensorial, endocrinological and neurological scales. These forces were believed to transmit sympathetically, and therapeutically, across horse, client and practitioner.

I argue that efficacy was perceived to be produced in orchestrating relatedness by bringing these various parts and wholes of the lively bodies of clients, horses and practitioners into proportion and harmony, and coproducing a 'kinetic melody'. This brought clients into synchrony with the rhythmic movements of the horse, and more broadly, with the rhythms of social time. I propose three therapeutic rhythms of extending temporalities to comprehend these models of efficacy, their perceived material effects and the interplays of movement and stillness bound up therein: 1) the calming rhythm of horseback movement, 2) the anchoring rhythm of weekly sessions, and 3) a rhythm produced by the expectation of achieving therapeutic goals in the future. In both senses of the word, these were rhythms that mattered.

This thesis has detailed my interlocutors' notions of therapeutic efficacy told through these various scales of bodily materiality and semiotic force. I have argued that it is not only the slipperiness of autism that created the need for this array of material metaphors based on biomedical framings of the systems of the body. Any one set of biomedical or other knowledges failed to fully account for my interlocutors experience of dynamic, lively bodies-in-time and the phenomenon of equine therapy. This led to the extensive proliferation of layers of bodily systems enmeshed in the environment that, as I have shown, were melded into a model of therapeutic efficacy. I have argued that through the translation of AM practices into the UK equine therapy context autism was enacted as a sensorially-mediated condition of body-self-world. As such, I have argued that AM and its practices act as a site of contemporary looping in autism. I have detailed three niches (Hacking 1998) coproduced by horses and humans through which this enactment of autism could occur: environmental, behavioural and physiological. The thesis is divided into three sections in keeping with this analytical frame.

More broadly I have suggested that due to its enduring heterogeneity and kaleidoscopic character autism remains a mirror on society (Hacking 2010). I argue that current looping processes constituting autism as a sensorially-mediated human condition reflect broader societal preoccupations with tensions between mind-body dualism and holism. Relatedly, I have argued that the transspecies resonances bound up in each layer of therapeutic efficacy, and thus bound up in these looping processes, constitute an animalising of humans, and a humanising of horses. This reflects broader societal concerns with human exceptionalism and what it is, exactly, that differentiates human animal kinds from nonhuman animal kinds. Each of the chapters has

detailed one of these composited layers of efficacy, and the material-semiotic aspects of each. With the overall argument of the thesis summarised above, I move on to detail these below.

By detailing the significant shifts that the classification of autism (and equine therapy as a practice) have undergone since their inception in the Introduction, I established the prerequisite context for the looping of autism detailed by the thesis; from psychiatric to a sensorially-mediated condition of the body-self-world. The significant import of the melding of environment and sensory issues in my interlocutors' understandings of the therapeutic efficacy of AM was introduced in Chapters 1 and 2. This was done through exploring the perceived irreducibility of the senses from the built environment in autism and the significant role this interaction played in the production of autistic symptomatology.

The irreducibility of autism from these inhabited worlds was established in Chapter 1, which detailed the lengths to which my interlocutors went to provide "the right physical environment" for clients. This was defined by providing spaces that were "as natural as possible" and which facilitated freedom from the pressures of constraint and allowed expansive movement, believed to be central to therapeutic efficacy. This simultaneously provided what was understood to be the best possible care for their team of therapeutic horses. These 'natural' spaces took much active moulding, whilst simultaneously being soft and fluffy enough to domesticate the teams of therapeutic horses that were housed within the centres. I showed that the horses oscillated between on one hand being highly domesticated and on the other wild and natural and that it was precisely the ambiguity of these aspects that produced their therapeutic efficacy.

The chapter established 1) how my human and equine interlocutors coproduced an environmental niche enacted by spaces considered to be "as natural as possible" (and therapeutic) for both autistic people and horses, 2) the ways that naturalness was produced, and 3) introduced the centrality of a range of resonances assumed to exist between horses and humans with autism and developed further in the following chapters. Chapter 1 speaks to renewed interest within the social sciences on therapeutic landscapes (Gorman 2017) and extends explorations of the role of the environment in 'living well' (Fitzgerald, Rose and Singh 2016) beyond the brain.

In Chapter 2 I have argued that my interlocutors' reports could be best apprehended via understanding the senses not as precultural aspects of the 'body proper' but as encultured materialities. In so doing I framed my interlocutors' understandings of sensory perception as folk models of the senses. One of these models positioned the senses as thresholds between the 'inside' and 'outside' of bodies where the effective processing of "inputs" and "outputs" was considered compromised in autistic people by some practitioners and parents. The application of "deep pressure" by the practitioner and horseback movement were understood to take clients

from spaces of sensory disintegration to "sensory integration". This was perceived to inculcate calm spaces of what I have termed stillness in motion for autistic clients. This practice was devised around the method founder and practitioners' understanding of the autistic practice of "stimming" – a range of self-stimulatory movement practices - as a form of "self-medication".

This chapter showed that for my interlocutors the senses referred to the processes of both the peripheral (PNS) and central nervous systems (CNS). As such I have evidenced that in this context autism was enacted in bodily phenomena beyond the brain. In so doing I contribute to the anthropology of embodiment with an exploration of embodied experiences of autism, and also extend the autism studies literature which has to date focused on predominantly neurological concerns and the neurological as a site of looping (see Bagatell 2010, Davidson and Orsini 2013, Fitzgerald 2014, Hacking 2007, 2009a, 2009b, 2010, Hart 2014, Orsini 2009, Ortega 2009, Ortega 2013, Silberman 2015). Chapters 1 and 2 have detailed what I call an environmental niche that I have argued was necessary for this sensorially-mediated kind of autistic person to emerge.

Timing was central to the efficacious balancing of the environmental and sensorial aspects detailed in Chapters 1 and 2, and to delicately "finding the right pressure". This was done to find an efficacious, client-specific state of "sensory integration" which could easily cross the threshold into "sensory overload" if misjudged - or indeed mistimed. As detailed in Chapter 3, this was intuited by practitioners and horses through listening and speaking with the body via a process of "tuning in" and "tuning out" from the client. This was aimed at bringing practitioner, horse and client into the rhythmic synchrony of horseback movement, and eventually also communicative synchrony. Chapter 3 illustrated this balancing process - bound up in the creation of a kinetic melody - in depth by following one client from his first session across the weekly rhythm of sessions for a period of 10 months.

This established the second of three rhythms holding my interlocutors' models of therapeutic efficacy together and offered a contribution to recent considerations of temporality and the underexplored area of the anthropology of rhythm. I have shown that bringing clients into synchrony with the beats of horses' hooves, and more broadly social time was key to the intervention. This required that practitioners find "balance" between the proportions of 1) reflecting on the past, whilst 2) stepping into 'being in the moment', and simultaneously 3) feeding forward to future therapeutic goals. This necessitated finding and channelling "the right intent" by the balancing of what I have set out in Chapter 4 as 'care in the moment', and 'care in the future'. This required finding a "balance" between keeping clients comfortable during each session

and pushing that little bit further to achieve the therapeutic goals as proscribed by parents and ultimately society at large.

Speaking to the burgeoning anthropology of empathy (Hollan 2008, 2012, Hollan and Throop 2008, 2011, Bubandt 2009, Bubandt and Willerslev 2015, Willerslev 2004, 2007) Chapter 4 contributes an exploration of embodied empathy (Despret 2013) in autism. As so directly stated by Verity, horses had taught her "how to human" specifically by their very inability to conceal their intent. This congruence had taught her how to "read between the lines" of human's at times incongruent communications and calculate when someone was "saying one thing, when they meant another". In her experience the ability to step into another's shoes and then out again for the purposes of concealment, was a very human category. The chapter analysed the tri-directional relations between people on and off the spectrum in their engagements with horses and found that these were in no way symmetrical, but rather constituted by laborious attempts to evade relationships of domination and enact relations of equality. It therefore contributes to the theoretical work of multispecies ethnography (Kirksey and Helmreich 2010).

This chapter also acts to bring together the two societal concerns I have argued are reflected upon by the current looping of autism as a sensorially mediated condition of situated selves. That is 1) where exactly minds (and relatedly sociality) 'are' in relation to the body and its inhabitation in the world, and 2) the animalizing of humans, and humanizing of animals occurring in current scholarly, scientific and popular debates regarding human exceptionalism. In detailing: "finding the right pressure"; "tuning in" and "out" (Chapter 3); the AM practice of "following the child" and the equine training practice of "free schooling" (Chapter 4), I have defined a behavioural niche which I have argued was central to the enactment of the sensorially-mediated kind of autism argued by this thesis to be occurring.

To relate back to chapters one through four, through calming sensory discomfort, and "finding the right pressure" between "input" and "overload", practitioners felt that they could "open up the learning centres of the brain" and effect long lasting change for the clients they worked with. This constituted the last of three therapeutic rhythms detailed by the thesis and that I argue hold my interlocutors' models of therapeutic efficacy together. This third rhythm was produced by the prior rhythms that enacted a beat that held an expectation for the future. As Chrissie put it, practitioners would do "anything to get the kids talking". This expectation I refer to centred around the perceived potential of AM for improving the "social functioning" of the child via enhanced communication skills and ultimately self-advocacy. As such, it constituted an inversion of the stillness in motion inculcated by calming the sensory discomfort of clients. Through

anchoring repetition, these steady homeostatic states could alter hormonal flows, immune system responses and pathways in the brain. These states of "balanced" equilibrium thus constituted a mutability of soma and psyche that I have termed mutability in stillness. I have argued that for my interlocutors these rhythms had material effects, they were rhythms that mattered.

I have argued that how this altering of the mind through the body happened was understood by my interlocutors' to occur via three corporeal processes explored by Chapters 5 and 6: "limbic resonance", "oxytocin", and "neuroplasticity". I have referred to these as 'symbolic matterings' to encapsulate 1) the symbolic power these biomedical notions of the body held 2) how the perceptions around these notions altered the ways that practitioners interacted with clients, and 3) the significant material effects these interactions produced. I argue that the three material metaphors established in Chapters 1 - 4: "balance", "integration", and "pressure" were used to understand how "limbic resonance" facilitated the therapeutic transmission of affect, how oxytocin flows were enhanced, and how "neuroplasticity" was enabled. Ultimately how autistic bodies were perceived to be modulated by the practices of AM.

Multiple resonances between horses and humans were believed to exist and these perceived resonances were reflected in references to bodily systems shared across human and nonhuman animals. These were encapsulated by my interlocutors' reference to the symbolic mattering of "limbic resonance" as detailed in Chapter 5. I reflect on and unpack this term "limbic resonance" as a way to explore my interlocutors' notion of a property of "flightiness" understood to be shared by autistic people - and those experiencing stress and anxiety in general - and horses. A body primed for entering the "fight or flight" response and an overproduction of the hormone cortisol were understood to be caused by chronic stress and produce a negative biofeedback loop whereby a heightened sensitivity made one more prone to a stress response and so on. "Limbic resonance" was manifold and as I have argued, encapsulated my interlocutors' belief in horses' ability to hear the affective signals reflected in a clients' heartbeat. In this context bodies were permeable to the affective transmissions of others. However, my interlocutors' understandings of efficacy were not entirely reducible to these affective transmissions between mechanistic material beings. These transmissions of affect were afforded by "expressing one's intent" via the flows of a pervasive vital system of "energy".

Canguilhem explores vitalism through its status as something always refuted and obsolete, existing on the boundary of medicine and biology (Greco 2005). For Canguilhem, vitalism is "a critical response to any form of thought that would reduce life to something non-vital and especially all mechanistic forms of reduction" (Osbourne 2016, 189). I have argued that the context specific

force of "energy" allowed my interlocutors a way of expressing the processes and relations shared between horses and people that theories conceptualising less than entirely dynamic systems of worldly bodies did not allow for. However, I also suggest we be wary of viewing biomedicine as being bounded by something such as vitalism. My interlocutors' appeals to "energy" reflects broader, increased interest in the therapeutic effects of vital forces of energy (in the case of electroconvulsive therapy) and magnetism (in the case of transcranial stimulation) within certain fields of biomedicine. The vitalistic forces of energy and magnetism currently cannot be fully understood as always existing on the periphery of a bounded (bio)medicine but could instead be comprehended as something that leaks out through heterogenous and porous systems of knowledge to fill spaces created by epistemological uncertainties.

"Oxytocin" and "cortisol" were understood to exist in a fixed relationship with one another. By encouraging the flow of oxytocin in the blood, "cortisol" release would slow and cease, and in turn stop "blocking learning" by "opening up the learning centres of the brain". AM had been devised around maximizing oxytocin flow wherever possible; via "deep pressure", squeezing and hugging, and rhythmic, rocking horseback movement. I have shown that oxytocin was a symbolic mattering: at once a material and deeply symbolic substance of relatedness in the context of my field sites. I have evidenced that oxytocin was viewed as a hormone of both bonding and mutability. This offers a contribution to the anthropology of hormones (see Appleton 2018, Bärnreuther 2018, Bell 1987, Hoberman 2005, Liboiron 2018, Marks 2001, Oudshoorn 1994, 2003, Roberts 2002, 2007, 2018, Sanabria 2016, 2018) through extending the literature beyond the flows of sex hormones. Through repeated sessions, it was believed that hormonal flows via the HPA axis would begin to change via facilitating "neuroplasticity". This would allow for enhanced learning and communication. oxytocin linked the early stages of the intervention which sought to offer instant soothing of sensory discomfort via deep pressure and rhythmic horseback movement, through to the more advanced stages of developing self-advocacy. I have shown that in this model of therapeutic efficacy outlined by my interlocutors, oxytocin operated as a transtemporal substance.

I have detailed both the complexly interrelated systems of the body understood to be productive of autism and relatedly therapeutic efficacy by my interlocutors, the simultaneity of both mutability and (a level of) fixity these models promote and the aligning of this simultaneity with an overarching interplay between movement and stillness. I have unpacked my interlocutors' claims regarding the facilitation of neuroplasticity by AM practices, asking what is at stake in the assumptions bound up in this third symbolic mattering. In so doing I have reflected upon recent researches utilizing (neuro)plasticity as a pervasive analytical frame (Malabou 2011, Rees 2016,

Sanabria 2016) and interrogating assumptions of the ever-flexible human therein. I have built upon the neurological focus in autism studies to date (see Bagatell 2010, Davidson and Orsini 2013, Fitzgerald 2014, Hart 2014, Orsini 2009, Ortega 2009, Ortega 2013, Silberman 2015) extending considerations of the autistic condition beyond the brain and central nervous system to the body and its worldly inhabitations.

The thesis has detailed the complex permeability of the lived body as my interlocutors saw it, and an emerging kind of sensorialised autism enacted in body-self-world interactions. It has argued that autism is continuing to loop, and through the translation of AM practices into the UK context (amongst many other sites of looping effects) a sensorially-mediated kind of autistic person is emerging. In so doing it has detailed a very contemporary shift in how autism is not only conceptualised and classified, but lived and experienced, extending such explorations beyond the brain, central nervous system and neurological systems and related inanimate IT metaphors in autism. I have shown that the models of therapeutic efficacy used by my interlocutors were based on notions of "balance", "integration", and "pressure", and corporeal systems of "limbic resonance", "oxytocin", and "neuroplasticity" that I have referred to as symbolic matterings. I have argued that the simultaneous interplays of movement and stillness: stasis and flux, stability and change, fixity and flow, bound up in these models reflect the continuing uncertainty around autism, and relatedly any form of therapeutic efficacy in autism.

This uncertainty regarding autism means that the condition offers a mirroring action on societal concerns. I have argued that in acting as a site of looping effects in autism AM practices reflect broader concerns regarding mind-body dualism and holism. Relatedly - through the increasing situating of the self in affective, sensorially extended and situated ways, it also reflects concerns regarding the boundaries between the human and nonhuman animal. In focusing on practices (Mol 2002), and partial relations as the smallest unit of analysis (Strathern 1991), this thesis has addressed a predominance of studies on medical technologies in exploring new forms of subjectivity and sociality, and on objects over animate nonhumans in research at the interface of anthropology and STS more broadly. This thesis has contributed to the interstices of autism studies, human animal studies and the anthropology of the body.

EPILOGUE

Unbridling the Method: Worldwide Expansion of AM and Its Approximations

Whilst AM had been developed around the horse as its central feature, the team were aware of the inaccessibility of equine therapy for children living in urban settings, both geographically and financially. The team were driven to address what they understood as a chronic under provision of the right learning environment and resources for children with autism - and children more broadly - in school situations. They had very recently translated AM into a more scalable method called 'Kinetic Kids' for use in urban, and importantly classroom, environments. The method aimed to provide training in how to create "the right physical environment" without horses or large, purpose-built centres. A version of "the right environment" could, with the right understanding, be produced anywhere, in an approximation of the ranch or stables. The team had been trialling this horse-free practice at their site in Texas and were beginning to offer training to other practitioners towards the end of my fieldwork period.

During one such training Freya and Amy taught us that if we were not able to be outside - in expensive, resource heavy situations – we should work to "bring the outside in". Freya told us, "that's why we suggest, especially when going to schools, setting up a forest corner, where they can be surrounded by plants. In a natural forest environment". Switching off artificial lighting was also understood as central to keeping cortisol levels down.

> You can buy screens for the flat fluorescent lights with clouds on them which makes it look like the sky. There are easy ways to change these bad sensory triggers, [such as] cleaning the environment with more natural products. Ones that smell like lavender, for example. Another way to take nature inside is to take natural objects inside. Let them play with sticks and rocks. Use wooden toys, not plastic ones. Bring nature in, but you can also produce the feeling of nature with colours, or natural prints. Just having a print of nature, will make a difference. You can have the feeling of being in nature, without being in nature.

As established by AM, the best possible therapeutic effects were produced by riding on a horse at a highly collected, rounded canter that would enhance the horseback ricking motion, outside, in 'nature'.

"The right environment" was a combination of "good sensory inputs" and space for extensive movement. Replacing "bad sensory triggers" with "good ones" could be orchestrated in urban settings, and in the classroom. So too could movement be incorporated into the interior design any environment. An approximation of the ultimate horse-based setting could be produced almost anywhere. Freya told us,

> we need to make sure that when we design an indoor environment we are not forgetting about the movement. Set up activity areas around the room for the kids to move from one to the other. Don't ask them to sit still. Set up a treasure hunt. Have a swing inside, or a hammock. The key of the method is just being creative, using what you have to promote the movement as much as possible.

Freya noted the importance of incorporating a range of tools for facilitating movement in the classroom environment. Exercise balls, and rocking chairs could replace regular chairs. "Sensory wedges" could be added to children's seats. These were water filled rubber seat pads which allowed a child to fidget, and continually shift to find a state of balance, without having to stand up and move around.

During this training I had met Sandy, a member of the local Education Board there to explore with Louis if and how 'Kinetic Kids' could be scaled up for rolling out in schools across the whole region. When staying at AM's base I also met Patricia, a central figure in the local home-schooling coalition who offered AM sessions at her nearby ranch for home-schooled children. She was there that day for a meeting with Louis to discuss how to bring his methods to the wider home-schooling community.

As I left the field Atalanta launched their new website 'Atalanta Training Systems™' offering a wave of new online training programmes for working with children with autism, and also ADD, ADHD, depression and PTSD in schools and at home, without the use of horses. This included their own version of Applied Behavioural Analysis (ABA) which they aimed to offer to practitioners in the hope of shifting the approach taken by the method to include working with stimming practices and using movement and the outdoors as therapeutic tools. A few weeks after I got home I caught up with Chrissie on Skype. She excitedly told me that she would finally be going to the AM ranch for more training. She had been trying to organise a trip there for months. As the sole AM practitioner at Epona it had proved difficult to find the right time around the tightly scheduled terms of sessions. Chrissie would be visiting the AM ranch to take part in a 'Train the Trainer' event, where 40 established AM practitioners would become certified trainers in the method.

The above indicates the organisation's drive to achieve a significant level of control over the worldwide provision of equine therapy for neurobiological conditions through - in their words - "achieving aggressive growth". This would allow a more rapid expansion of practitioners across the world, without the need for expensive travel costs for either practitioners travelling to the ranch, or Louis or others travelling worldwide to offer training. This strategy was positioned as a way to help the organisation achieve its goal of increasing its reach from 25,000 families in 2017,

to 1,000,000 people by 2021/22. Developing new training systems to include 'Kinetic Kids' for use by teachers, home-schoolers and behavioural therapists, and to develop a kinetic method for children and adults with PTSD, and a programme for veterans was the means to achieve this expansion.

The ultimate long-term goals of the organisation are now to become "the world's leading neuroscience based equine therapy service" and to offer a breadth of non-horse based and accessible interventions for a wider range of conditions. Atalanta now offer and train others in activities they describe as movement-based interventions for the nervous system. However, as explored throughout the thesis, this is not isolated to the CNS and brain, but includes the PNS, immune and endocrine systems in worldly inhabitation. Future research could explore this worldwide expansion of AM and its approximations. A multi-practice ethnographic approach could be used to follow these facsimiles of AM as they travel and are translated in increasingly diverse contexts, and the kinds of autism, and indeed ADHD, ADD, depression and PTSD these practices enact in these novel sites.

REFERENCES

Alaimo, S., 2010. The Naked Word: The Trans-corporeal Ethics of the Protesting Body. *Women and Performance*, 20(1), pp.15–36.

Alaimo, S. & Hekman, S. eds., 2008. *Material Feminisms*, Indiana: Indiana University Press.

American Psychiatric Association, 1980. *Diagnostic and Statistical Manual of Mental Disorders. DSM-III (3rd ed.)*. Washington, DC: American Psychiatric Association.

-- 1994. *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV (4th ed.)*. Washington DC: American Psychiatric Association.

-- 2013. *Diagnostic and Statistical Manual of Mental Disorders: DSM-V*, (5th ed.).Washington, D.C: American Psychiatric Association.

Anderson, B. and Wylie, J., 2009. On Geography and Materiality. *Environment and Planning A*, 41, p.318–35.

Anon., 2016. 'Parkhill House'. [Accessed January 12 2017].

Appleton, N.S., 2018. Unintended Logics. *Member Voices, Fieldsights, August 14*. Available at: https://culanth.org/fieldsights/unintended-logics.

Ayres, A.J., 1972. *Sensory Integration and Learning Disorders*. Los Angeles, CA: Western Psychological Services.

Bagatell, N., 2007. Orchestrating Voices: Autism, Identity and The Power Of Discourse. *Disability & Society*, 22(4), pp.413–426.

-- 2010. From Cure to Community: Transforming Notions of Autism. *Ethos*, 38(1), pp.33–55.

Baio, J. et al., 2018. Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years — Autism and Developmental Disabilities Monitoring Network , 11 Sites , United States , 2014. *MMWR Surveillance Summaries*, 67(6), pp.1–28.

Barad, K., 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, Durham: Duke University Press.

Barcan, R., 2011. *Complementary and Alternative Medicine: Bodies, Therapies, Senses*. Oxford: Berg.

Bärnreuther, S., 2018. Hormones. *Member Voices, Fieldsights, August 3*.

Baron-Cohen, 2002. The Extreme Male Brain Theory of Autism. *Trends In Cognitive Sciences*, 6(6), pp.248–254.

Baron-Cohen, S., 1995. *Mindblindness—An Essay on Autism and Theory Of Mind*. Cambridge, MA: Bradford Book.

Baron-Cohen, S., Leslie, Alan, M. & Frith, U., 1985. Does the Autistic Child Have a "Theory of Mind"? *Cognition*, 21(1), pp.37–46.

Bear, L., 2014. Doubt, Conflict, Mediation: The Anthropology of Modern Time. *Journal of the Royal Anthropological Institute*, 20(S1), pp.3–30.

Belek, B. 2019. Autism and the Proficiency of Social Ineptitude : Probing the Rules of "Appropriate" Behavior Explicitation of Social Etiquette. *Ethos*, 46(2), pp.161–179.

Bell, S., 1987. Changing Ideas: The Medicalization of the Menopause. *Social Science & Medicine*, 24(6), pp.535–42.

Bettelheim, B., 1967. *The Empty Fortress: Infantile Autism and the Birth of the Self*. New York: Free Press.

Birke, L., 2007. "Learning to Speak Horse": The Culture of "Natural Horsemanship." *Society and Animals*, 15, pp.217–239.

-- 2017. Meeting Points: Choreographies of Horses and Humans. *Trace: Finnish Journal for Human-Animal Studies*, 3, pp.54–70.

Birke, L. & Brandt, K., 2009. Mutual Corporeality: Gender and Human/Horse Relationships. *Women's Studies International Forum*, 32(3), pp.189–197.

Birke, L. & Hockenhull, J., 2015. Journeys Together: Horses and Humans in Partnership. *Society and Animals*, 23, pp.81–100.

Bourdieu, P., 1977. *Outline of a Theory of Practice* J. Goody, ed. Cambridge: Cambridge University Press.

Brennan, T., 2004. *The Transmission of Affect*. New York: Cornell Univeristy Press.

Brezis, R.S. et al., 2015. Parenting a Child with Autism in India: Narratives Before and After a Parent–Child Intervention Program. *Culture, Medicine, and Psychiatry*, 39(2), 277–298.
Broderick, A.A. & Ne'eman, A., 2008. Autism as Metaphor: Narrative and Counter-Narrative. *International Journal of Inclusive Education*, 12(5–6), pp.459–476.
Bubandt, N., 2009. From The Enemy's Point of View: Violence, Empathy, and the Ethnography of Fakes. *Cultural Anthropology*, 24(3), pp.553–558.
Bubandt, N. & Willerslev, R., 2015. The Dark Side of Empathy: Mimesis, Deception and the Magic of Alterity. *Comparative Studies in Society and History*, 57(1), pp.5–34.
Butler, J., 1993. *Bodies That Matter: On the Discursve Limits of "Sex"*., New York and London: Routledge.
Canguilhem, G., [1965] 2008. *Knowledge of Life*. NY: Fordham University Press.
-- 1966. *The Normal and the Pathological*. Zone Books.
Cannon, B., 1994. Walter Bradford Cannon: Reflections on the Man and His Contributions. *International Journal of Stress Management*, 1(2), pp.145–158.
Cannon, W.B., 1929. Organization of Physiologic Homeostasis. *Physiological Reviews*, 9, pp.399–427.
Caroll, L., 1865. *Alice's Adventures in Wonderland*. Macmillan Publishing.
Carsten, J. 2011. Substance and Relationality: Blood in Contexts. *Annual Review of Anthropology*, 40(1), pp.19–35.
Cascio, M.A., 2015. Cross-Cultural Autism Studies, Neurodiversity, and Conceptualizations of Autism. *Culture, Medicine, and Psychiatry*, 39, pp.207–212.
Cassidy, R., 2002. *The Sport of Kings: Kinship, Class and Thoroughbred Breeding in Newmarket*. Cambridge: Cambridge University Press.
Chamak, B. et al., 2008. What Can We Learn About Autism From Autistic Persons? *Psychotherapy and Psychosomatics*, 77(5), pp.271–279.
Conway, C., 2018. The Unbearable Sensation of Being: Living With Sensory Processing Disorder. *UCSF News Center*. Available at: https://www.ucsf.edu/news/2018/06/410786/living-with-sensory-processing-disorder [Accessed April 5, 2019].
Coole, D. & Frost, S. eds., 2010. *New Materialisms: Ontology, Agency and Politics*. Durham: Duke University Press.
Copeman, J., 2018. "Blood." In Hilary Callan, ed. *Wiley-Blackwell International Encyclopedia of Social Anthropology*. Oxford: Blackwell.
Csordas, T. J., 2002. *Body/Meaning/Healing*. Hampshire and NY: Palgrave Macmillan.
Daniel, E.V., 1984. 'The Pulse as an Icon in Siddha Medicine'. In E. V. Daniel & J. F. Pugh, eds. *Contributions to Asian Studies 18*. Leiden: Brill, pp. 115–126.
Darius, 2002. In D. Prince-Hughes, ed. *Aquamarine Blue 5: Personal Stories of College Students with Autism*. Athens, Ohio: Swallow Press.
Davidson, J. & Henderson, V.L., 2010. "Travel in parallel with us for a while": Sensory Geographies of Autism. *Canadian Geographer*, 54(4), pp.462–475.
Davidson, J. & Orsini, M. ed., 2013. *Worlds of Autism: Across the Spectrum of Neurological Difference*. University of Minnesota Press: Minnesota.
Desjarlais, R., 1997. *Shelter Blues: Sanity and Selfhood Among the Homeless*. Philadelphia: University of Pennsylvania Press.
-- 2003. *Sensory Biographies: Lives and Deaths Among Nepal's Yolmo Buddhists*. Berkeley: University of California Press.
Despret, V., 2004. The Body We Care for: Figures of Anthropo-zoo-genesis. *Body & Society*, 10(2–3), pp.111–134.
Despret, V., 2013. Responding Bodies and Partial Affinities in Human-Animal Worlds. *Theory, Culture & Society*, 30(7–8), pp.51–76.
Deweerdt, S., 2016. Talking Sense: What Sensory Processing Disorder Says About Autism. *Spectrum News*. Available at: https://www.spectrumnews.org/features/deep-dive/talking-sense-what-sensory-processing-disorder-says-about-autism/ [Accessed August 15 2017].
Dewsbury, J.D., 2000. Performativity and The Event: Enacting a Philosophy of Difference. *Environment and Planning D*, 18, pp.473–96.

Dhossche, D.M. & Stanfill, S., 2004. Could ECT be Effective in Autism? *Medical Hypotheses*, 63, pp.371–376.
Dobler, G., 2016. 'Work and Rhythm' Revisited: Rhythm and Experience In Northern Namibian Peasant Work. *Journal of the Royal Anthropological Institute*, 22(4), pp.864–883.
DuBois, D. et al., 2016. Interoception in Autism Spectrum Disorder: A Review. *International Journal of Developmental Neuroscience*, 52, pp.104–111.
Ecks, S. & Kupfer, C., 2015. "What Is Strange Is That We Don't Have More Children Coming To Us": A Habitography of Child Psychiatrists and Scholastic Pressure In Kolkata, India. *Social Science & Medicine*, 143, pp.336–342.
Edginton, B., 1997. Moral Architecture: The Influence of The York Retreat on Asylum Design. *Health and Place*, 3(2), pp.91–99.
Elden, S., 2006. Heidegger's Animals. *Continental Philosophy Review*, 39, pp.273–291.
Enticott, P.G. et al., 2013. Brain Stimulation A Double-blind, Randomized Trial of Deep Repetitive Transcranial Magnetic Stimulation (rTMS) for Autism Spectrum Disorder. *Brain Stimulation*, 7(2), pp. 206–211.
Evans, B., 2013. How Autism Became Autism: The Radical Transformation of A Central Concept of Child Development In Britain. *History of the human sciences*, 26(3), pp.3–31.
Fein, E., 2015. Making Meaningful Worlds: Role-Playing Subcultures and the Autism Spectrum. *Culture, Medicine, and Psychiatry*, 39(2), pp.299–321.
Fitzgerald, D., 2014. The Trouble With Brain Imaging: Hope, Uncertainty and Ambivalence in the Neuroscience Of Autism. *BioSocieties*, 9(3), pp.241–261.
Fitzgerald, D. & Callard, F., 2014. Social Science and Neuroscience Beyond Interdisciplinarity: Experimental Entanglements. *Theory, Culture & Society*, 32(1), pp.3–32.
Fitzgerald, D., Rose, N. & Singh, I., 2016. Living well in the Neuropolis. *The Sociological Review Monographs*, 64(1), pp.221–237.
Foucault, M., 1980. *Power/Knowledge: Selected Interviews and Other Writings 1972-1977* C. Gordon, ed., New York: Pantheon Books.
-- 1991. 'Questions of Method'. In G. Burchell, C. Gordon, & P. Miller, eds. *The Foucault Effect: Studies in Governmentality*. Chicago: University of Chicago Press., pp. 73–86.
Fuentes, A., 2010. Naturalcultural Encounters in Bali: Monkeys, Temples, Tourists, and Ethnoprimatology. *Cultural Anthropology*, 25(4), pp.600–624.
Gallagher, S., 2008. Direct Perception in the Intersubjective Context. *Consciousness and Cognition*, 17(2), pp.535–543.
Gallagher, S. & Jacobson, R.S., 2012. 'Heidegger and Social Cognition'. In J. Kiverstein & M. Wheeler, eds. *Heidegger and Cognitive Science*. United Kingdom: Palgrave Macmillan, pp. 213–245.
Gallese, V., Eagle, M.N. & Migone, P., 2007. Intentional Attunement: Mirror Neurons and the Neural Underpinnings of Interpersonal Relations. *Journal of the American Psychoanalytic Association*, 55(1), pp.131–176.
Garfinkel, S.N. Seth, A.K., Barrett, A.B., Suzuki, K., and Critchley, H.D., 2016. Discrepancies Between Dimensions of Interoception in Autism: Implications for Emotion and Anxiety. *Biological Psychology*, 114, pp.117–126.
Gillis-Buck, E.M. & Richardson, S.S., 2014. Autism as a Biomedical Platform For Sex Differences Research. *BioSocieties*, 9(3), pp.262–283.
Giraud, E. & Hollin, G., 2017. Care, Laboratory Beagles and Affective Utopia. *Theory, Culture & Society*, 33(4), pp.27–49.
Gorman, R., 2017. Therapeutic Landscapes and Non-human Animals: The Roles and Contested Positions if Animals Within Care Farming Assemblages. *Social & Cultural Geography*, 18(3), pp.315–335.
Grandin, T. & Panek, Ri., 2014. *The Autistic Brain: Exploring the Strengths of a Different Kind of Mind*. Rider Publishing.
Grandin, T. & Scariano, Margaret, M., [1986] 2005. *Emergence: Labelled Autistic, A True Story*. New York: Grand Central Publishing.
Greco, M., 2005. On the Vitality of Vitalism. *Theory, Culture and Society*, 22(1), pp.15–27.

Grinker, R.R. & Cho, K., 2013. Border Children: Interpreting Autism Spectrum Disorder in South Korea. *Ethos*, 41, pp.46–74.
Guerts, K., 2003. *Culture and the Senses: Bodily Ways of Knowing in an African Community*, California: University of California Press.
Gutting, G., 2011. Michel Foucault. *The Stanford Encyclopedia of Philosophy (Fall 2011 Edition)*. Available at: http://plato.stanford.edu/entries/foucault/. [Accessed April 8, 2012].
Hacking, I., 2009a. Autistic Autobiography. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, 364(1522), pp.1467–73.
-- 1998. *Mad Travellers: Reflections on the Reality of Transient Mental Illnesses.*, Virginia: University of Virginia Press.
-- 2007. "Kinds of People: Moving Targets." *Proceedings of the British Academy*, 151, pp.258–318.
-- 2009b. How We Have Been Learning To Talk About Autism: A Role For Stories. *Metaphilosophy*, 40(3–4), pp.499–516.
-- 2010. Autism Fiction: A Mirror of an Internet Decade? *University of Toronto Quarterly*, 79(2), pp.632–655.
Haraway, D.J., 1988. Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. *Feminist Studies*, 14(3), pp.575–599.
-- 1997. *Modest_Witness@Second_Millennium. FemaleMan©_Meets_OncoMouse™: Feminism and Technoscience.*, New York and London: Routledge.
-- 2003. Emergent Naturecultures. In *The Companion Species Manifesto: Dogs, People And Significant Otherness*. Chicago: Prickly Paradign Press.
-- 2006. Encounters with Companion Species: Entangling Dogs, Baboons, Philosophers, and Biologists. *Configurations*, 14(1), pp.97–114.
-- 2008. *When Species Meet*, Minnesota: University of Minnesota Press.
-- 2016. *Staying with the Trouble: Making Kin in the Chthulucene*. Durham: Duke University Press.
Harris, A., 2016. Listening-touch, Affect and the Crafting of Medical Bodies through Percussion. *Body and Society*, 22(1), pp.31–61.
Hart, B., 2014. Autism Parents & Neurodiversity: Radical Translation, Joint Embodiment And The Prosthetic Environment. *BioSocieties*, 9(3), pp.1–20.
Heidegger, M., [1927] 1966. *Being and Time*. New York: State University of New York Press.
Hendriks, R., 2012. *Autistic Company*. Amsterdam: Rodopi.
Hickman, C., 2009a. Cheerful Prospects And Tranquil Restoration: The Visual Experience Of Landscape As Part Of The Therapeutic Regime Of The British Asylum, 1800-60. *History of Psychiatry*, 20(4), pp.425–441.
-- 2009b. The Picturesque at Bridlington House, Bristol: The Role of Landscape in Relation to the Treatment of Mental Illness in the Early Nineteenth-Century Asylum. *Garden History*, 33(1), pp.47–60.
-- 2014. The Garden as a Laboratory: The Role of Domestic Gardens As Places of Scientific Exploration In The Long 18th Century. *Post-Medieval Archeology*, 48(1), pp.229–247.
Higashida, N., 2013. *The Reason I Jump: One Boy's Voice from the Silence of Autism*. London: Random House.
Hinton, D.E., Howes, D. & Kirmayer, L.J., 2008. Toward a Medical Anthropology of Sensations: Definitions and Research Agenda. *Transcultural Psychiatry*, 45(June), pp.142–162.
Hoberman, J., 2005. *Testosterone Dreams: Rejuvenation, Apphrodisia, Doping*, Berkeley and Los Angeles: University of California Press.
Hollan, D., 2008. Being There: On the Imaginative Aspects of Understanding Others and Being Understood. *Ethos*, 36(4), pp.475–489.
-- 2012. Emerging Issues in the Cross-Cultural Study of Empathy. *Emotion Review*, 4(1), pp.70–78.
Hollan, D. & Throop, C.J., 2008. Whatever Happened to Empathy?: Introduction. Ethos, 36(4), pp.385–401.
Hollan, D.W. & Throop, C.J. eds., 2011. *The Anthropology of Empathy: Experiencing the Lives of Others in Pacific Societies.*, Berghahn Books: New York, NY.
Hollin, G., 2014. Constructing a Social Subject: Autism and Human Sociality In The 1980s. *History of the Human Sciences*, 27(4), pp. 98–115.

-- 2017. Autistic Heterogeneity: Linking Uncertainties and Indeterminacies. *Science as Culture*, 26(2), pp.209–231.
Hollin, G.J.S. & Pilnick, A., 2015. Infancy, Autism and The Emergence of a Socially Disordered Body. *Social Science & Medicine*, 143, pp. 279-86.
Howes, D. ed., 2005. *Empire of the Senses: The Sensual Culture Reader*. Oxford: Berg.
Howes, D. & Classen, C., 2014. *Ways of Sensing: Understanding the Senses in Society*. Oxon: Routledge.
Hsu, E., 2005. Tactility and The Body In Early Chinese Medicine. *Science in Context 18*, pp.7–34.
Hurn, S., 2008. What ' s Love Got to Do With It ? The Interplay of Sex and Gender in the Commercial Breeding of Welsh Cobs. *Society and Animals*, 16, pp.23–44.
Ingold, T., 2000. *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*, London and NY: Routledge.
-- 2011. Worlds Of Sense and Sensing The World: A Response To Sarah Pink and David Howes. *Social Anthropology*, 19(3), pp.313–317.
-- 2012. Looking for Lines in Nature. *Earthlines*, (November), pp.48–51.
Irvine, R., 2014. Thinking With Horses: Trouble with Subjects, Objects and Diverse Entities in Eastern Mongolia. *Humanimalia*, 6(1), pp.62–94.
Jahoda, G., 2005. Theodor Lipps and The Shift From "Sympathy" To "Empathy." *Journal of the History of the Behavioral Sciences*, 41(2), pp.151–163.
Kapp, S.K. et al., 2012. Deficit, Difference, or Both? Autism and Neurodiversity. *Developmental Psychology*, April 30, pp.1–13.
Kelly, Ann, H., 2014. Urban Mosquitoes, Situational Publics, and The Pursuit of Interspecies Separation in Dar es Salaam. *American Ethnologist*, 41(2), pp.368–383.
Kirksey, S.E. & Helmreich, S., 2010. the Emergence of Multispecies Ethnography. *Cultural Anthropology*, 25(4), pp.545–576.
Komeda, H., 2015. Similarity Hypothesis: Understanding of Others With Autism Spectrum Disorders By Individuals With Autism Spectrum Disorders. *Frontiers in Human Neuroscience*, 9(March), pp.1–7.
Kuhn, R., 2004. Eugen Bleuler's Concepts of Psychopathology. *History of psychiatry*, 15(59 Pt 3), pp.361–366.
Lai, M., Lombardo, M. V & Baron-Cohen, S., 2014. Autism. *The Lancet*, 383, pp.896–910.
Lange, C.G. & James, W., 1967. *The Emotions* K. Dunlap, ed., Macmillan Publishing.
Langer, S., 1953. *Feeling and Form.*, New York: Charles Scribner's Sons.
Laplantine, F., *The Life of the Senses: Introduction to Modal Anthropology*, London: Bloomsbury.
Lappé, M.D., 2014. Taking Care: Anticipation, Extraction and the Politics of Temporality in Autism Science. *BioSocieties*, 9(3), pp.304–328.
Latimer, J., 2013. Being Alongside: Rethinking Relations Amongst Different Kinds. *Theory, Culture & Society*, 30(7–8), pp.77–104.
Latimer, J. & Birke, L., 2009. Natural Relations: Horses, Knowledge, Technology. *The Sociological Review*, 57, pp. 1–27.
Latimer, J. & Miele, M., 2013. Naturecultures? Science, Affect and the Non-human. *Theory, Culture & Society*, 30(7–8), pp.5–31.
Latour, B., 1987. *Science in Action: How to Follow Scientists and Engineers Through Society*, Harvard: Harvard University Press.
-- 2004. How to Talk About the Body? the Normative Dimension of Science Studies. *Body & Society*, 10(2–3), pp.205–229.
-- 2005. *Reassembling the Social: An Introduction to Actor-Network Theory*, New York: Oxford University Press.
Lea, J., 2018. Understanding Therapeutic Massage as a Form of Bodywork: Knowing and Working on the (Energy) Body. *Sociology of Health & Illness*, 41(1), pp. 180–195.
Liboiron, M., 2018. "Hormone Disruption in Newfoundland. *Member Voices, Fieldsights, August 14*. Available at: https://culanth.org/fieldsights/hormone-disruption-in-newfoundland [Accessed September 12, 2018].
Lock, M. & Farquhar, J. eds., 2007. *Beyond the Body Proper: Reading the Anthropology of Material Life*, Durham and London: Duke University Press.

Lüdtke, K., "We've Got This Rhythm in Our Blood": Dancing Identities in Southern Italy. In H. N. Kringelbach & J. Skinner, eds. *Dancing Cultures: Globalization, Tourism and Identity in the Anthropology of Dance*. New York: Berghahn Books, pp. 60–76.
Luria, A.R., 1973. *The Working Brain: An Introduction to Neuropsychology*, London: Allen Lane.
Mackenzie, A. & Roberts, C., 2017. Adopting Neuroscience: Parenting and Affective Indeterminacy. *Body and Society*, 23(3), pp.130–155.
MacLean, Paul, D., 1990. *The Triune Brain in Evolution. Role in Paleocerebral Functions*. New York: Plenum.
Malabou, C., 2008. *What Should We Do With Our Brain?* Trans. Rand S., New York: Fordham University Press.
-- 2011. *Changing Difference: The Feminine and the Question of Philosophy*. Cambridge, UK: Polity Press.
Malcolm, R. 2015. Hanging Out the Side. [Photograph].
-- 2016. Sensory Seeking. [Photograph].
-- 2016. Seeking Contact. [Photograph].
Malcolm, R., Ecks, S. & Pickersgill, M., 2018. 'It Just Opens Up Their World': Autism, Empathy, and The Therapeutic Effects of Equine Interactions. *Anthropology and Medicine*, 25(2): 220-234.
Manning, E., 2013. *Always More Than One: Individuation's Dance*. Durham and London: Duke University Press.
Marcus, George, E., 1999. What Is At Stake–and Is Not–In The Idea and Practice of Multi-Sited Ethnography. *Canberra Anthropology*, 22(2), pp.6–14.
Marks, Lara, V., 2001. *Sexual Chemistry: A History of the Contraceptive Pill*, New Haven and London: Yale University Press.
Martin, E., 1994. *Flexible Bodies: Tracking Immunity in American Culture from the Days of Polio to the Age of AIDS*, Boston: Beacon Press.
Maurstad, A., Davis, D. & Cowles, S., 2013. Co-Being and Intra-Action In Horse-Human Relationships: A Multi-Species Ethnography of Be(Com)Ing Human and Be(Com)Ing Horse. *Social Anthropology*, 21(3), pp.322–335.
McDonagh, P., 2013. Autism in An Age of Empathy: A Cautionary Critique. In Davidson, J. & Orsini, M. ed., 2013. *Worlds Of Autism: Across the Spectrum of Neurological Difference*. University of Minnesota Press: Minnesota. pp. 31–52.
McWade, B., Milton, D. & Beresford, P., 2015. Mad Studies and Neurodiversity: A Dialogue. *Disability and Society*, 30(2), pp.305–309.
Merleau-Ponty, M., 1968. *The Visible and the Invisible*, Evanston: Northwestern University Press.
-- 2000. *The Phenomenology of Perception*, London: Routledge.
Milton, D.E.M., 2012. On the Ontological Status of Autism: The 'Double Empathy Problem.' *Disability & Society*, 27(6), pp.883–887.
-- 2014. Becoming Autistic: An Aut-ethnography. *Cutting Edge Psychiatry in Practice [online]*, 4, pp.185–192.
-- 2017. Zen and the Art of Aut-ethnography: A Tribute to Robert M. Pirsig. *Disability and Society*, 32, pp.1671–1676.
Milton, D.E.M. & Sims, T., 2016. How Is a Sense of Well-Being and Belonging Constructed In the Accounts of Autistic Adults? *Disability and Society*, 31, pp.520–534.
Moeran, B.B., 2007. From Participant Observation to Observant Participation: Anthropology, Fieldwork and Organizational Ethnography. *Creative Encounters*, (July), pp.1–25.
Mol, A., 2002. *The Body Multiple: Ontology in Medical Practice*. Durham: Duke University Press.
-- 2014. Language Trails: 'Lekker' and Its Pleasures. *Theory, Culture & Society*, 31(3), pp.93–119.
Mol, A., Moser, I. & Pols, J. eds., 2010. *Care in Practice: On Tinkering in Clinics, Homes and Farms. Perspectives from Empirical Science Studies, Volume 8*. Bielefeld: Transcript.
Moya, P., 2014. Habit and Embodiment in Merleau-Ponty. *Frontiers in Human Neuroscience,* 8(July), pp.1–3.
Mukhopadhyay, T.R., 2000. *Beyond the Silence: My Life, the World and Aautism.*, London, UK: National Autistic Society.
Navon, D. & Eyal, G., 2014. The Trading Zone of Autism Genetics: Examining the Intersection

of Genomic and Psychiatric Classification. *BioSocieties*, 9(3), pp.329–352.
Ness, S.A., 1997. Originality in the Postcolony: Choreographing the Neoethnic Body of Philippine Ballet. *Cultural Anthropology*, 12(1), pp.64–108.
Newen, A., Bruin, L. De & Gallagher, S., 2018. *The Oxford Handbook of 4E Cognition*, Oxford: Oxford University Press.
Newschaffer, C.J. et al., 2007. The Epidemiology of Autism Spectrum Disorders. *Annual Review of Public Health*, 28, pp.235–58.
Niewöhner, J. & Lock, M., 2018. Situating Local Biologies: Anthropological Perspectives on Environment/human Entanglements. *BioSocieties*, 13(4), pp.681–697.
O'Dell, L. et al., 2016. Critical autism studies: exploring epistemic dialogues and intersections, challenging dominant understandings of autism. *Disability & Society*, 17(6), pp. 685-694.
Ochs, E.& S.O., 2007. Practical Logic and Autism. In R. B. Casey, Conerly & Edgerton, ed. *A Companion to Psychological Anthropology: Modernity and Psychocultural Change*. Blackwell Publishing: Oxford, pp. 140–167.
Orsini, M., 2009. 'Contesting the autistic subject: Biological Citizenship and the autism/autistic Movement.' In S. J. Murray, ed. *Critical Interventions in the Ethics of Healthcare: Challenging the Principle of Autonomy in Bioethics*. Surrey: Ashgate Publishing, pp. 115–132.
Ortega, F., 2013. 'Cerebralising autism within the neurodiversity movement'. In J. Davidson & M. Orsini, eds. *Worlds of Autism: Across the Spectrum of Neurological Difference*. pp. 73–96.
Ortega, F. & Choudhury, S., 2011. 'Wired up differently': Autism, adolescence and the politics of neurological identities. *Subjectivity*, 4(3), pp.323–345.
Osborne, T.S.D., 2016. Vitalism as Pathos. *Biosemiotics*, 9(2), pp.185–205.
Oudshoorn, N., 1994. *Beyond the Natural Body: An Archeology of Sex Hormones*. London and New York: Routledge.
-- 2003. *The Male Pill: A Biography of a Technology in the Making*. Durham and London: Duke University Press, ed.
Pasternak, C., 2007. *What Makes Us Human?* One World Publications.
Pearce, J.M.S., 2004. Historical note: Sir Charles Scott Sherrington (1857–1952) and the synapse. Journal of Neurology, Neurosurgery & Psychiatry, 75, pp.1994–1994.
Penn, D.C., Holyoak, K.J. & Povinelli, D.J., 2008. Darwin's mistake: explaining the discontinuity between human and nonhuman minds. *The Behavioral and brain sciences*, 31, pp.109-130.
Peters, M.E., 2019. Heidegger's embodied others: on critiques of the body and 'intersubjectivity' in Being and Time. *Phenomenology and the Cognitive Sciences*,18(2): 441-458.
Pickersgill, M., 2013. The social life of the brain: Neuroscience in society. *Current Sociology. La Sociologie contemporaine*, 61(3), pp.322–340.
Pink, S. & Howes, D., 2011. The Future of Sensory Anthropology/ The Anthropology of the Senses (debate section). *Social Anthropology*, 18(3), pp.331–340.
Pitts-Taylor, V., (ed). 2016. *Mattering: Feminism, Science and Materialism* New York and London: New York University Press.
Pols, J., 2005. Enacting appreciations: Beyond the patient perspective. *Health Care Analysis*, 13(3), pp.203–221.
Pradeu, T. & Cooper, E.L., 2012. The danger theory: 20 years later. *Frontiers in Immunology*, 3(287), pp.1–9.
Puig de la Bellacasa, M., 2011. Matters of care in technoscience: Assembling neglected things. *Social Studies of Science*, 41(1), pp.85–106.
-- 2017. *Matters of Care: Speculative Ethics in More Than Human Worlds*. Durham: Duke University Press.
Reed, S.A., 2002. Performing Respectability : The Berava , Middle-Class Nationalism , and the Classicization of Kandyan Dance in Sri Lanka. *Cultural Anthropology,* 17(2): 246-277.
Rees, T., 2016. *Plastic Reason: An Anthropology of brain Science n Embryogenetic Terms*, Oakland: University of California.
Rios, C. & Costa Andrada, B., 2015. The changing face of autism in Brazil. *Culture, Medicine, and Psychiatry*, 39(2), pp.213–234.
Roberts, C., 2002. 'A matter of embodied fact': Sex hormones and the history of bodies. *Feminist*

*Theory, 3(*1): 7-26.
-- 2007. *Messengers of Sex: Hormones, Biomedicine and Feminism. Cambridge Studies in Society and the Life Sciences*, Cambridge, UK: Cambridge University Press.
-- 2018. Titrating, Tinkering, and Tracking. *Member Voices, Fieldsights, August 29*. Available at: https://culanth.org/fieldsights/titrating-tinkering-and-tracking [Accessed September 12, 2018].
Roulstone, A., 2015. Personal Independence Payments, welfare reform and the shrinking disability category. *Disability and Society*, 30(5), pp.673–688.
Rutherford, A., 2018. *The Book of Humans: The Story of How We Became Us*. London: Orion Books.
Sanabria, E., 2016. *Plastic Bodies: Sex Hormones and Menstrual Suppression in Brazil*, Durham: Duke University Press.
-- 2018. Endurance and Alterability. *Member Voices, Fieldsights, August 21*.
Sarrett, J.C., 2015. Custodial Homes, Therapeutic Homes, and Parental Acceptance: Parental Experiences of Autism in Kerala, India and Atlanta, GA USA. *Culture, Medicine, and Psychiatry*, 39(2), pp.254–276.
Seth, A.K., 2013. Interoceptive inference, emotion, and the embodied self. *Trends in Cognitive Sciences*, 17(11), pp.565–573.
Sherrington, C.S., 1906. *The integrative action of the nervous system.*, Cambridge, UK: Cambridge University Press.
Shore, S., 2003. *Beyond the Wall: Personal Experiences with Autism and Asperger Syndrome.*, Shawnee Mission, Kansas: Autism Asperger Publishing Company.
Silberman, S., 2015. *NeuroTribes: The Legacy of Autism and How to Think Smarter About People Who Think Differently*. Allen and Unwin.
Silverman, C., 2012. *Understanding Autism: Parents, Doctors and the History of a Disorder*. Princeton & Oxford: Princeton University Press.
Slaby, J. & Gallagher, S., 2014. Critical Neuroscience and Socially Extended Minds. *Theory, Culture & Society*, 32(1), pp.33–59.
Smith, A., 2008. The Empathy Imbalance Hypothesis of Autism : A Theoretical Approach to Cognitive and Emotional Empathy in Autistic Development. *The Psychological Record*, 59, pp.273–294.
Solomon, O., 2010. Sense and the Senses: Anthropology and the Study of Autism. *Annual Review of Anthropology*, 39(1), pp.241–259.
-- 2012. Doing, Being and Becoming: The Sociality of Children with Autism in Activities with Therapy Dogs and Other People. *Cambridge Anthropology*, 30(1), pp.109–126.
-- 2015. "But-He'll Fall!": Children with Autism, Interspecies Intersubjectivity, and the Problem of 'Being Social.' *Culture, Medicine, and Psychiatry*, 39(2), pp.323–344.
Solomon, O. & Bagatell, N., 2010. Introduction: Autism: Rethinking the Possibilities. *Ethos*, 38(1), pp.1–7.
Steele, M.A. et al., 2008. Cache protection strategies of a scatter-hoarding rodent: Do tree squirrels engage in behavioural deception? *Animal Behaviour*, 75(2), pp.705–714.
Stengers, I., 2011. Comparison As a Matter of Concern. *Common Knowledge*, 17(1), pp.48–63.
Strathern, M., 1991. *Partial Connections*. Rowman & Littlefield Publishers.
Street, A., 2016. The art of medicine: Making people care. *The Lancet*, 387(10016), pp.333–334.
Tammet, D., 2006. *Born on a blue day: a memoir of Asperger's and an extraordinary mind*. London, UK: Hodder and Stoughton.
Tanzer, M., 2016. Heidegger on Animality and Anthropocentrism. *Journal of the British Society for Phenomenology*, 47(1), pp.18–32.
Thompson, E.P., 1967. Time, Work, Discipline and Industrial Capitalism. *Past and Present*, 38, pp.56–97.
Tsing, An., 2009. Supply chains and the human condition. *Rethinking Marxism*, 21(2), pp.148–176.
-- *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*, Princeton: Princeton University Press.
Ujfalussy, D.J., Miklósi, Á. & Bugnyar, T., 2013. Ontogeny of object permanence in a non-storing corvid species, the jackdaw (Corvus monedula). *Animal Cognition*, 3, pp.405–416.

de Waal, F.B.M., 1992. Intentional deception in primates. *Evolutionary Anthropology*, 1(3), pp.86–92.

Westling, L., 2011. Merleau-Ponty's Human – Animality: Intertwining and the Animal Question. *Configurations, 18,* pp 161-180.

Weston, K., 2018. The ethnographer's magic as sympathetic magic. *Social Anthropology*, 26(1), pp.15–29.

Wheeler, M., 2011. Martin Heidegger. *The Stanford Encyclopedia of Philosophy (Winter 2018 Edition)*. Available at: https://plato.stanford.edu/archives/win2018/entries/heidegger/.

Willerslev, R., 2004. Not animal, not Not-Animal: Hunting, Imitation and Empathetic Knowledge among the Siberian Yukaghirs. *Journal of the Royal Anthropological Institute*, 10, pp.629–52.

-- 2007. *Soul Hunters: Hunting, Animism, and Personhood among the Siberian Yukaghirs.*, Berkeley: University of California Press.

Williams, D., 1998. *Autism and Sensing: The Unlost Instinct*, Jessica Kingsley Publishers.Williams, D., 2005. *Autism: An Inside-Out Approach: An Innovative Look at the Mechanics of Autism and Its Developmental Cousins*, London and Philadelphia: Jessica Kingsley Publishers.

Wing, L., 1981. Asperger's syndrome: a clinical account. *Psychological Medicine*, 11, pp.115–129.

Winnicott, David, W., 1953. Transitional objects and transitional phenomena; a study of the first not-me possession. *International Journal of Psychoanalysis*, 34(2), pp.89–97.

Wolf-Meyer, M., 2014. Therapy, Remedy, Cure: Disorder and the Spatiotemporality of Medicine and Everyday Life. *Medical Anthropology: Cross Cultural Studies in Health and Illness*, 33(2), pp.144–159.

You, H., 1994. Defining rhythm: Aspects of an anthropology of rhythm. *Culture, Medicine and Psychiatry*, 18, pp.361–384.

Zhan, M., 2009. *Other-Worldly: Making Chinese Medicine through Transnational Frames*, Durham: Duke University Press.