THE RIDER-BIKE ASSEMBLAGE: A QUALITATIVE INVESTIGATION
OF THE EMBODIED ADULT LEARNING OF AMATEUR BICYCLE ROAD RACERS

A Dissertation in
Adult Education

by

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ABSTRACT

The purpose of this qualitative study is to examine how adults informally learn through engaging with their bicycles in the sport of amateur road racing, and to understand how this learning has shaped their individual and social identities. The study is grounded in two intersecting theoretical frameworks: embodied adult learning theory (especially those discourses drawing on Merleau-Ponty’s philosophy of the body); and actor network theory (ANT), which focuses on how human beings and objects within a network act as one *assemblage*. The design of the study combines an autoethnographic approach with narrative inquiry, and thus examines both the writer’s personal experiences in amateur bicycle road racing and its unique subculture as embodied learning, and the narratives of six amateur road racers chosen according to purposeful criteria. Data collection for the narrative portion consisted primarily of two semi-structured interviews with each of the six participants. Additionally, participant-provided visual documents and artifacts were used as elicitation devices to revisit racers’ bodily movements in athletic action. An autoethnographic analysis was employed to examine the writer’s personal racing stories, while narrative analysis was used to examine the participants’ racing stories.

Data analysis revealed three themes of findings. The first focuses on the role of networks in changing identity, and how bicycle racing pushed the rider in a competitive setting in the natural world and resulted in a more positive identity. The second theme focuses on riders’ relationship with their always co-present bicycle, where they felt at one with it, except in times of stress when the bicycle became ‘‘other.’’ The third theme focused on the role of self-imposed pain and will as part of competition. The study concludes with a discussion of the findings in light of actor network theory, and embodied adult learning theory and offers suggestions for theory and practice.
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physiology, but chose instead to observe my teaching in the biology laboratory and remarked to them that education in healthcare is in good hands: “Here’s a fellow, from the very start, who is sensitive to the human condition, can assess it, and deal with it. And…can, and always could turn thought into action. Lots of action.” My parents’ love and encouragement has always served as the catalyst for my actions.
PART ONE

CHAPTER ONE: AUTOETHNOGRAPHY

Escape with me now
This confine of stagnation:
Press play and repeat

Prologue

My bicycle and I are packed tightly together among 72 other cyclists as we prepare to enter a 90-degree turn in the road. The peloton, or the moving mass of racers, averages speeds near 30 miles per hour throughout the 27-mile race. Each of the racers is positioned shoulder to shoulder, elbow to elbow, wheel to wheel to the riders that surround them. Their bodies are attuned to listen and speak to other riders through the silent language of embodied gestures learned from years of experience in bicycle racing. Attempting to speak words to communicate only competes with the breathing process necessary to bring the air required for this feat of physiological challenges. Just before entering the turn, the racers’ bodies shift reflexively from a tightly crouched racing position that neutralizes, to a large degree, the effect of wind on their athletic efforts, to an upright riding position as their speed slows as they enter the sharp apex of the corner. Their knees reflexively drop outward and away from their bicycles toward the ground as they prepare to enter the sharp corner. This shifting movement counterbalances the effect of physics pulling the riders towards the outside edge of the corner by centripetal force. The riders’ inside pedals are in an elevated position with the riders’ knees bent at a sharp angle; their outside pedal is pressed down with straightened legs bearing much of the riders’ weight and in order to further stabilize them as they attempt to stay as close to the inside edge of the curve as
possible. We move like a blur from a spectator’s vantage point as the entirety of the speeding-
mass approaches the angle’s approach from the opposite edge of the turn’s opening. The peloton
swells resembling the shape of a pear as the riders slow as their momentum takes them through
the corner (Fig. 1-1). Wheels, gears, chains and racers’ breathing can be heard audibly by those
watching as a buzz of organic and metallic, whirring sounds. Bodies and machines bound
together in a silent dialogue of embodied movement and energy that transitions within time and
space. As the racers exit the corner the peloton regains its linear shape indicative of the speed
they gain as the racers sweep to the outside edge of the road again on the far side of the corner.
This entire scenario has taken perhaps three seconds to unfold. It is repeated four times for each
of the mile-long laps in the rectangular-shaped race course. Spectators of cycle sport racing flock
in great numbers not only to see the winners of such athletic events, but also to witness the
phenomenon of riders enmeshed with their machines performing athletic feats that are almost
impossible to describe with mere words alone. The racers and their bikes almost appear to be
fused to one another as they speed by. The peloton too, akin to a flock of birds, moves as a single
entity. Most of the riders are so attuned with their bicycles and with those with whom they race,
that they may find describing what they actually do, using spoken dialogue, difficult to describe.

Setting the Context

The story in the prologue captures the meaning I make from one experience I had racing
my bicycle. The story has always been part of me, but the formal learning opportunity of doing
coursework for my doctorate, where I was introduced to concepts related to embodied learning,
actor network theory, as well as the philosophy of the body of Merleau-Ponty, inspired me to
probe deeper into how my bicycle has become part of me as well as my feeling that I become part
of my bicycle through the way we move in unity. This has resulted in this dissertation project,
which examines how adults (including myself) informally learn through engaging with their bicycles in the sport of amateur road racing, and seeks to understand how this learning has shaped their individual and social identities. This study is largely a narrative study, in that I include the narratives of six amateur bicycle racers (in Chapters Five through Ten), but given that I too am an amateur bicycle racer, I also include my own autoethnography.

Autoethnography is a methodological approach used to investigate the researcher’s own culture relative to the topic of investigation (Chang, 2008). In this study, I explore my experiences as an insider within a local community of amateur bicycle racers in order to gain a broader perspective of how other members of this unique culture shape their meaning-making experiences through racing and the artifacts and objects that surround the sport of bike racing. By drawing on the knowledge and personal racing experiences I have gained as a member of this unique culture, I can, as a researcher, better understand and present the stories and artifacts of the participants I interviewed who make up this culture (Boylorn, 2008; Foster, McAllister & O’Brien, 2006).

As implied above, a part of the inspiration for this work came from an opportunity to study the role of human perception and the importance of the body in learning through Merleau-Ponty’s (1962) philosophy of the body as discussed in his book The Phenomenology of Perception. I realized that many parts of his philosophy resonated with my cycling experiences and inspired me to write and include a Haiku poem as a header for each chapter. A Haiku poem is typically a personal expression of meaning making from the writer’s perspective; as such, it would likely be in line with Merleau-Ponty’s philosophy which emphasizes an individual’s unique perception of their view of the world. Hence, I asked each of the participants in this study if they were willing to write their own Haiku from their first-person perspectives of an important moment from their bicycle racing experiences. These appear as a part of their unique expression as the header of the chapter that features that participant.
One element of my learning that emerged from this dissertation study was the role of movement as a means of silent, creative, human expression. The prologue above provides several specific examples of the use of non-discursive language, or language conveyed through unarticulated symbols or body movements (Mertz, 2007). This silent language is important as a form of communication and helps connect us to others in the spaces we share. The story also provides context for the importance of motor learning, or gaining skills from experiences that bring valuable meaning and relevancy to learning (Merleau-Ponty, 1962). An example of this can be seen in the flick of an elbow from a cyclist riding at the front of a pack of riders in the wind and gesturing to the rider directly behind him. It serves as an invitation to pull through and take their effort at the front of the pack for the greater benefit of the group.

This chapter traces my experiences of riding and racing a bicycle throughout my life set in the context of time as it intersects with the culture and to the people who have been connected to my bicycling experiences. The experience of riding a bicycle itself is also central to how I understand the experiences of other bicycle racers, including the participants in this dissertation study. As riding a bicycle has shaped so many of my personal and social experiences, having the opportunity to revisit them not only has been an important way to for me to understand myself, but it has also helped me understand the uniqueness of road racing culture as well as its social elements through my co-created experiences with other racers. It is also an opportunity to relate my knowledge and learning as a graduate student to my cycling experiences through multiple lenses. Through the confluence of the academic perspectives that all connect to embodied adult learning theory informed by different threads, I have come to understand the role of the body in learning to experience and perceive the world in a particular cultural context in a new way. Briefly, some of these academic influences include Embodied Learning Theory in adult education (Freiler, 2008; Swartz, 2012), Actor Network Theory (Fenwick & Edwards, 2011), and the philosophy of the body of Merleau-Ponty (1962) referred to above. Embodied adult learning
theory allows me to explore how my body, through movement, is able to access valuable learning. The social constructs of Actor-Network Theory acknowledge the value of objects (such as bicycles, in this instance) that are part of the networks where they and other people intersect with my cycling experiences. The philosophy of the body of Maurice Merleau-Ponty helps me understand how my body as the primary site of my knowing, shapes the perceptions I have of my world resulting from my cycling experiences. These interconnecting threads of influence are discussed in more detail in Chapters Two and Three, but are occasionally referred to in this chapter as I discuss my own autoethnography of bicycle riding and road racing.

This chapter is organized into three sections. The first section explores how the bicycle as an object shaped my identity, and how and why I decided to pursue this topic as a dissertation. The second explores the ways my bicycle served as a means through which I developed connectivity to other riders and built valuable social relationships through the culture of bike racing. The third discusses how, through my relationship with racing and with my bicycle, I was able to bring balance to other aspects of my personal life and with my job and family. In the final part of this chapter a brief discussion is offered that brings context to the way objects, such as my bicycle creates valuable meaning to adult Embodied Learning Theory which is the primary focus of this research project.

**Shaping my Identity through the Object of the Bicycle**

The bicycle has not only influenced the way that I make meaning in the world through the embodiment of movement, but it has shaped my identity as a vehicle through which I gained independence, gained knowledge of my abilities and strengths which resulted in greater confidence and has led to my feeling of freedom through autonomy. This section explores how my bicycle has been an important object to shaping my identity. It begins in the present time with
a story that relates my experience as a graduate student, enrolled in an adult education program and culminated in an opportunity to explore how the bicycle relates to adult Embodied Learning Theory. I then move backward in time to explore how my experiences as a public-school teacher led up to my present position educating adults in a higher education setting teaching anatomy and physiology. Finally, in the last section, I re-connect my first memories of riding my bicycle, with important points in my life that eventually led to being a competitive athlete in the sport of amateur road racing.

An Opportunity to Explore my Relationship with the Bicycle Academically

As a student in Penn State’s Lifelong Learning and Adult Education Doctoral Program, both my advisor and the members of cohorts who were further along in their program and who were already involved with their own research projects, encouraged me to explore a subject for my dissertation project for which I was passionate. They explained that the long journey in seeing a dissertation come to fruition best begins by choosing a subject for which the writer has a deep connection. I considered the opportunity to explore my experiences racing a bicycle for more than 20 years not only personally important, but exciting because I could discover new meaning in my cycling experiences through the learning I gained in my graduate program courses. Having an opportunity to discover how my relationship with my bicycle intersects with adult learning theory could potentially bring me great personal and academic satisfaction; but the prospect of interviewing and learning from others about their own bicycle racing experiences and making further meaning of these experiences and exploring the implications of the findings for adult learning was exciting. My background of practice as an educator as a public-school biology teacher was also important in shaping this opportunity to explore the role of the human body and learning through objects. It provides further context to my relationship with the bicycle and
My undergraduate formal education focused on the sciences and science education, specifically biology. The positivist approach I developed in understanding the world around me was in sharp contrast to the social and psychological framework which strongly influences adult education and lifelong learning. The field of adult education draws from a unique language and multiple research perspectives. Its epistemological grounding utilizes very different methodological approaches to knowing than what is most typical in the biological sciences. I was not aware that qualitative research existed before I entered this program. I taught secondary high school sciences for 32 years. My master’s research had me involved with two projects simultaneously: squashing African tree-hole breeding mosquitoes to measure their ecdysteroid endocrine hormone titres, and enumerating fecal coliform bacteria in stream sediments through fluorogenic analysis. Because of my pursuit of a graduate degree in biology, I had the opportunity to teach in a higher education setting. Presently, I am an educator of aspiring healthcare professionals at a health sciences college. My employer generously provided me with an opportunity to continue my scholarship by pursuing an advanced degree. I was at a point in my life to consider such an offer both exciting and challenging. After discussing the possibility of my return to school with my wife on the way to a Penn State Football game, I committed myself to taking further action to pursue a doctoral degree in adult education and lifelong learning offered by Penn State University.

As noted, this research is about the experiences both myself and other bicycle racers have with our bicycles and with other bikers in networks that include people and objects (bicycles). But understanding these relationships and experiences as embodied will make more sense if I discuss how bicycles first began to shape my identity. The later chapters of this dissertation explain how bicycles were involved in shaping the identity of my participants.
My Red Spaceliner

My first bicycle became an important part of my identity and shaped the person I am presently. My red Spaceliner is both is a symbol of my independence and strength as well as a metaphorical vehicle for my love of freedom and spontaneity in life. I got my first real bicycle, my red Spaceliner, for my birthday when I turned eight years. I have memories of sharing a tricycle with my brother and sister when I was younger, but because it was more of a toy than a vehicle, and because it was not mine exclusively, I had no emotional bonds with it. I was mostly restricted to riding the shared tricycle in our driveway. But I did venture around our neighborhood on that tiny three-wheeler; riding on the network of sidewalks which connected the houses and alleys to the block where my home was. I wasn’t really able to go very far on it, but with its larger wheels, chain and gears, with its bright chrome frame (it was a Sears department store model), I could ride much farther with my Spaceliner, and through it, I discovered my love of independence.

My bike was called a Spaceliner because it came equipped with a cool red jet tank housing a control panel for its built-in dual headlights. My parents had it poised on its kickstand atop of our family dining room table to surprise me on the morning of my special day. I can vividly recall gazing upward in awe at its gleaming chrome and red colors and seeing how big it was. It seemed larger than life. My new bike would kindle a fire inside of me - a passion that is hard to describe with words, but clearly draws in other bike riders for similar reasons. For me, riding my bicycle is a way to seek freedom from the ordinary through physical movement. It also became my partner in learning how big the world around me really was. Riding my Spaceliner created opportunities to discover the things around me, like my local playground, or the creeks and streams which became my favorite places to play, and to get there fast. But it was more than just a bike; I developed a partnership with my bicycle that allowed me to experience movement
through my body which has freed me from the boredom of routine and has led me to discover the physical world around me. As an object, my bicycle has not only been part of me in my physical movements, it has led me to discover my own identity by connecting what I learned riding my bicycle to my personal strengths.

**The Bicycle as a Vehicle to Identity**

We would spend hours together, my Spaceliner and me, exploring parts of my small, working-class town in eastern Pennsylvania, discovering new places in the world that surrounded me locally. I had the freedom to ride wherever my curiosity led me. My parents had no idea how far I went – sometimes several miles away to a town I never knew existed across the Lehigh River. I met new people and found new places to go that would lead me to explore even more new things. I never got lost. I discovered I had a great sense of direction and through it became fascinated with the freedom my bicycle afforded me. I could go anywhere I wanted by myself – much faster and safer. My little town was full of bullies who would chase you down and give you the business if I was on foot, but with my bike, I could quickly avoid them because I was faster on my bike than they could ever hope to run on foot. Through my bicycle I discovered my love of being independent. It often seemed as if other people were in control of my life more than I was myself at home, in school or in social settings with extended family, but my bike could change all of this in an instant. My escape - out the driveway, down the alley; I was gone in body, mind and spirit. Away from having to sit still all day at my desk in school acting like a miniature adult. School had the opposite effect – it thwarted my love of expressing myself through physical movement.

My body didn’t like to stop long enough to be a good learner in school. Sitting still was really difficult for me. My elementary report cards were all smattered with C’s and D’s with an
occasional A in gym or F in math. My primary school grade reports had a familiar theme throughout the written comment sections that had been neatly hand written by all my teachers: “Jonathan is capable of better work.” And “Jonathan has the ability to do well in school if he would focus on his learning.” In eighth grade my English teacher told me flat out: “You’re not college material.” She was probably right. I had to repeat the eighth grade, an emotionally upsetting situation for me because I was placed in a remedial section with other kids that seemed different than me. Our family had just moved from a small steel and cement producing town to the farmlands of Lancaster County, and it was a cultural shock on my first day of my re-do of eighth grade. School had me sitting motionless; idle in the way movement created learning opportunities for me. Physical movement has always provided me with a means to internalize knowledge by the way it actively connected me to my experiences through all of my body’s senses. My bike ride to school was a form of moving meditation for me that allowed me time to prepare for the stagnation of sitting in a classroom seat all day. Likewise, my ride home helped me forget about school by reconnecting me with my love of freedom of movement.

**Knowing Self through the Bicycle**

Because my bicycle became a way that I constructed positive, meaningful embodied experiences that resulted from my love of the physicality of movement, I developed quite a knack with using my hands to repair bicycles. So, through my love of bicycles, I learned of other abilities that I had, such as with mechanics and the use of hand tools. When I wasn’t riding my bike, I was often in the garage at my home working on my bike – either altering original equipment or fixing something that had broken or made noise when I was riding. Sometimes my folks would put me on “restriction,” limiting my rides to several blocks around my home when I earned bad grades or if I had ignored my other responsibilities such as taking out the garbage or
cleaning my room, but more often than not, the restrictions resulted from how my bicycle swept me away – allowed me to escape what I considered to be mundane and boring. I learned that I could express myself creatively and spontaneously when I was riding my bicycle. Bike riding afforded me the opportunity to explore how movement allowed me to escape from a world that was organized in segments that seemed to be repeated on a daily basis. On my bike, I could get away from all of this – there were new places to go, new things to see and do, and so much of me was excited and in love with how I could move silently and quickly – almost effortlessly on my bike. My bike would grasp my whole body and instantly we could forget the confines of organization and responsibility. For these reasons, the bicycle has been a tool that has been both a passion in my life and has become deeply part of my identity.

Discovering Freedom through the Bicycle

Throughout my life, riding my bike has never been a chore or just something else to do, but has grasped me, held me, and taken me like the insane passion of a love affair that arises within me, but never dwindles or invites the let-down of reality. It is freedom through movement, a habit that begins with “reworking and renewal of the body schema. (Merleau-Ponty, 1962/2012, p. 143). In describing how we learn to include unconscious habits of the body through our intentions, Merleau-Ponty offers: “The body, as has often been said, “catches” (kapiert) and “understands” the movement (p. 144). The experiences that I have had on my bike illustrate this phenomenon. Indeed, your bike becomes part of how you express yourself when you spend so much time together. They take place in a “milieu, against a background determined by the movement itself (...)” (Merleau-Ponty, 1962/2012, p. 139). But truly, the things that took me away from my seat in the classrooms – the objects through which I found freedom through
motion – have brought me back to my seat again so that I may explore, from an academic perspective, the learning I experience through my body with my bicycle.

My Spaceliner and I parted ways a few years after we met, but I would have other bikes – and they were all uniquely shaped and designed and thus brought different experiences to me in my bike riding. Each bike felt different and allowed me to experience riding a bike a little differently. My blue Schwinn Stingray had smaller wheels and so I was able to maneuver quickly or “pop wheelies” because of the high handle bars. Later I had a touring bike that had such a low gear ratio that I could climb hills slowly and easily without a physical struggle. But my Spaceliner was my first bike and like so many department store bicycles, it had been assembled by someone who obviously lacked expertise in bicycle mechanics. One day, the front wheel of my bike suddenly separated from the fork as I was speeding down Walnut Street hill. The resulting crash sent me flying over the handlebars, onto the street, and ultimately into a bruised, bleeding heap curbside. I eventually recovered from my crash, but my Spaceliner was a tangled, twisted mess that was not able to be repaired. I took her to Benny Sax’s junk yard for scrap. I had other bicycles throughout my youth, but at some point, in my mid-teen-age years, I lost my emotional contact with my bike temporarily. Other things like driving a car and dating became center-stage in my life. But several years after I began my teaching career as an adult, I connected with my bicycle again and to the value of the meaning I gained from my love of riding through the physicality of movement.

**Reconnecting to the Bicycle**

I bought my first red Cannondale racing bike several years after I began my teaching career. Several of my colleagues were discussing innovations in bicycle technology in the lunch room one day such as the integration of clipless pedals to cycling shoes which provide bike riders
with greater pedaling efficiency. Because I never heard of clipless pedal technology, the discussion made me aware that I had lost contact with my bicycle and that I had no knowledge of these new innovations in cycling technology. The conversation spurred me to reconnect with my bicycle one again. One of my colleagues realized that I could be a potential riding partner as we already had built a professional friendship. One afternoon after school we traveled to Delaware where he knew of a bike shop. The new Cannondale I eventually purchased was light, sleek and stiff and fit me well. I knew the instant I straddled the top tube of this bike that it felt right.

Previously in my mid-teens, I rode a white 56 cm Peugeot racing bike designed to fit someone much taller than me. My body was stretched out too far on that bike to comfortably reach the brake levers, and my seat post was not visible because it was crammed entirely into the bike’s seat tube. A proper fit with your bike is of primary importance if you are spending three or more hours at a time together. Merleau-Ponty (2012) discusses the paradox of how objects in our world, at times, feel like they are part of us, and at other times they refuse to assimilate and form a relationship with us. Even a proper fitting bike can feel awkward at times, when my body is exhausted or in “the region of “in-itself” – a place Merleau-Ponty (1962/2012) describes apraxia movement disorders in which “objects or space can be present to our knowledge without being present to our body” as “a servant of our consciousness” (p. 140). But my Cannondale felt like it was part of me compared to my old Peugeot, because it fit me so well. Another important part of my bike riding experiences has been the way my bicycle has connected me to other people and that resulted in new friendships as a result of our shared embodied experiences. Cyclists quite often seek out other people who share their enthusiasm for riding as it is much safer to ride with other riders; as a larger moving mass, groups of riders are more visible to drivers, and are also less likely to be bullied by motorists. Many motorists have the mindset that cyclists do not belong on our public roadways. They will cut you off in traffic, shout at you, and “buzz” you by passing so closely, that it often makes cyclists think twice about venturing out for a ride alone. It has been
my experience that motorists demonstrate this unacceptable behavior more often with cyclists who are riding alone. Riders in groups present motorists with sort of a wolf-pack mentality, so they often leave us alone. The social aspects of cycling facilitate the connection of riders to the existing network of other riders and racers who share your interest in the sport. In the next section, I offer a discussion of how I developed social embodied connectivity to other riders by riding and racing my bicycle.

**Social Connectivity/Dis-Connectivity to Others Fostered Through the Bicycle**

After the racing bug caught me, I discovered a group of local racers who trained by riding a daily 40-mile training ride that met on the corner of my neighborhood at exactly the same time each weekday afternoon. Local riders knew this ride as The River Ride because it was started by a rider who lives along the Susquehanna River and uses the route to commute back and forth to work each day. Group rides that meet on a regular basis such as The River Ride help motivate racers to stick to a regular training schedule. They also offer the safety of riding as a group with others. Rory, a well-known road racer who has won or placed in several national championship races throughout his career, started the tradition of The River Ride and I considered it a privilege to ride with him on his daily commutes and to learn from his vast experiences in road racing. My daily drive home from school took 45 minutes, so I always rushed home to make the River Ride.

**The River Ride**

I learned a great deal from the daily River Rides that became part of me for over 25 years. I learned strategies for racing by listening to stories of other experienced riders, and my body learned how to adapt to the repetitive movements of cycling and built strength and stamina.
needed for competition. Another well-known local racer who had won several national criterium and road race championships told me that it takes at least three years of racing and training for a racer to get their legs. The body, according to his point of view, needed to learn to make circles with the bike peddles, and this involved developing unique leg muscles and stamina to do so for long periods of time. Another rider I met, Steven, also told me it takes time to get your legs. The River Ride also gave me an opportunity to learn about road racing culture. There were many unspoken rules in bike racing. How to move through a mass of moving riders, how to approach and move through a corner, how not to pull off the front of the peloton (Fig 1-1). There were special words and phrases riders used, unique clothing and equipment that identified serious racers from casual riders. Connecting with the social aspects of riding and racing allowed me to become a member of this unique culture. It was not only a new learning opportunity for me, but also a way for me to identify as a member of a group of racers and gain confidence and a social identity among other local racers and cycling enthusiasts. The culture of road racers is unique and as first approached, it is not easy to understand until you are invited to be a part of it.

Cycling Culture

From gears and frames to the special attire cyclists wear, the culture of road racers speaks not only of equipment, but of a long and unique European tradition of tough guys. There seemed to be two opposing philosophies shared by many riders with whom I spent many hours training and racing. One philosophy shared by many of the techno-savvy riders espoused the importance of the newest, lightest and most efficient equipment and clothing to looking cool and in their benefits to racing efficiency. To them, it was all about looking gee-whiz with innovations that reduced their bicycle’s weight, friction and drag in order to increase their racing speed. The second philosophy was practiced by riders who leaned toward more old-school cycling traditions.
They rode classic, steel-framed bikes because they were old-school and looked like bikes the pro racers rode in the decades gone by. They wore wool clothing silhouetted with European team names that no longer existed. They only wore black tights or cycling shorts, because that was just the tradition. One rider I knew had been so immersed in cycling tradition, it reached outside of his love of racing into other aspects of his life.

**Changing my Social Identity through “Roadie” Culture**

One of the people that influenced my identity as a bicycle racer is Damien. Damien has been an important influence to my understanding of cycling culture because of his vast experiences in bike racing and also because his deep knowledge of professional racing culture. His life inside and outside of the sport of cycling has been shaped by the great icons of professional road cycling. Damien especially relates to cyclists from Belgium because they live in an area of Europe known for harsh weather conditions and cobble-paved streets. For this reason, professional cyclists from Belgium are often known as hardmen. Brett (2009) defines hardmen as cyclists especially from the region of Flanders known for

- slogging it out for hours on end in the harsh northern climates, eating mouthfuls of mud mixed with animal waste from the ancient farm “roads,” surfaces which were never intended for fragile bicycle wheels to traverse, but rather wooden cart wheels to be dragged along by cloven hooves (p.1).

Damien considers himself to be hardman because he has traveled to Belgium and lived and cycled with professional racers from the Flanders region of Belgium. As his experiences and identity as an amateur racer have been strongly influenced by hardmen, he, as a well-respected locally-known racer, has shared his influences with many other members of his racing community which I too, am a member. For example, Damien rides and races in any kind of weather and
identifies as being resilient and tough for it. On a visit to Damien’s apartment, I observed the walls were covered with professional bike racing posters from the 1970’s. He still watches VHS tapes of old classic One-Day Classic Race movies like Paris-Roubaix, Gent-Wevelgem or Het-Volk. He also eats old food. Instead of carrying the newer convenient and nutritious gel-packs for energy during rides, Damien frequently takes baked potatoes and bananas with him on his rides, because that’s what hardmen take with them – nothing fancy, just nutritious, portable food. His life has been largely influenced by his old cycling heroes. He shuns a lot of recent cycling technologies, because he enjoys living in the past. His bicycle frame is steel and is painted in the traditional shade of Bianchi-green and is equipped entirely with authentic Campagnolo Italian bicycle racing parts. He wears full-length tights that cover his legs until the average daily temperature is at least 60 degrees Fahrenheit. In short, he lives his life this way because bike racing touched him as a teenager and totally absorbed him throughout his life. His practices and beliefs have also influenced other riders because he believes so passionately that traditional equipment, practices, and clothing are better because they have been tested over great lengths of time. When I began to experience success in racing my bicycle, he invited me to ride with him and the other cyclists who shared his traditional view of cycling culture. Riding with Damien opened up other opportunities for me to be part of the local cycling sub-culture. Because of Damien’s vast knowledge, experience and strong cultural identity in the sport of cycling, his influences have impacted many of my embodied practices with cycling culture through the equipment I use, the clothing I wear and through my techniques in racing and training.

All of our teammates have a Belgian lion emblazoned in various places on our cycling kit (the name for the team clothing outfit members of the same team wear), because it is an embodied symbol of our shared identity as hardmen. Because Damien was the most experienced rider in the county and had raced since he was 14 years of age, many other racers on our team were influenced by his traditional training methods and love of traditional cycling culture. As a result,
our entire team identifies with the Belgian lion as symbol of strength and unity. The Belgian national flag includes a lion and can often be seen displayed as a symbol of unity and strength by passionate spectators during mountain stages of the Tour de France and in other major stage races or single-day length, Classics Races. My perspective as a cyclist originates with Damien’s knowledge and teaching of hardmen racing culture because it has shaped my identity as an athlete and outside the sport of cycling by being able to overcome adversity through perseverance and inner strength. As a researcher, this perspective has allowed me to gain insight to other racers’ experiences with cycling culture through the stories they tell.

**Embodiment of Success through Cultural Connectivity through the Bicycle**

When Damien went for training rides, every member of the group rode in a double pace line. In this style of training, riders two abreast, side-by side, and when they were finished taking a pull at the front of the pack, they neatly peeled off to each side in unison and moved backwards to the rear of the group. The group was moved through this method of constant rotation. In this way, everyone shared the effort on the front in the wind aiding the entire group. It is very efficient and makes a great deal of sense. It’s a lot like migrating geese when they move in a V-shaped format. The double-pace line riding structure was strictly enforced. If someone didn’t follow this structure, Damien or one of his loyal cronies would scream at them or, if they insisted on interrupting the structure and rhythm of the peloton, taking more physical measures. People who repeatedly skip sharing a turn at the front doing work in a race have been known to suddenly crash, when someone “accidentally” hits their brakes, or be dropped from the ride as the remaining group peloton members all organizes in order to eliminate them. This can be done without dialogue. When the person who skips taking a turn is next in line to take a pull, the rider in front of them suddenly accelerates so violently, they are forced to chase them in order to
maintain their draft. Drafting another rider can save a great deal of energy. When each person in the group repeats this strategy of quick acceleration, it becomes almost impossible for the rider they are trying to shed from their group to continue their effort to stay with the group. Each rider accelerates once each revolution of the peloton while the rider the group is getting rid of has to accelerate for every rider. Although Damien’s need to have his values of racing culture become everyone else’s culture, I must add that I learned a great deal about racing strategies by riding with him by drawing from his vast experiences of racing. I had failed as a beginning racer in part because I was ignorant of how to save energy during a race and that it involved the ability to read the race as it unfolded – that is, how to read the silent language of racers’ body language.

After first failing several times at racing, I began to earn a reputation in my area as a successful road racer. I was finishing consistently among the top 10 riders in my road races, and collecting cash prizes, state-level and regional-level medals. My name frequently appeared in the newspaper in the cycling sports briefs. I began to notice that other riders I had never seen before knew my name. Some of our Sunday training rides in the off-racing season had riders from several hours away transporting their bicycles in their automobiles just to join this ride. Sometimes the field of riders for our Sunday rides would total 75 or more racers. Gossip runs with fluidity in this unique culture of roadies – when riders go easy on such off-season training rides, or on days after hard races during the racing season to facilitate recovery, roadies like to tell stories - lots of stories. That is one way that cyclists hear about who is winning races. Everyone seems to know who and what racers have done in races. I have often heard this phrase uttered by road racers: you are only as good as your finish in your last race. There doesn’t seem to be barriers among roadies that separate people into groups by their title, their job or how much money they earn. One of the most interesting parts of roadie culture is that it cuts across many boundaries that we observe in other aspects of our lives. I have encountered riders from all sorts of careers – laborers, business owners, builders, lawyers, physicians, musicians as well as people
who are unemployed. My family once fed a racer who was homeless on several occasions. His wife had locked him out of his house due to his addiction to bike racing. Another aspect of road racing bicycle culture is how mean road racers can be. They seem to embody a level of meanness that just seems to be standard operating procedure for road cyclists.

**Race Face**

Because roadies are so competitive, racers have a reputation for often being quite mean and unfriendly. They often display their unfriendliness through their body language, sometimes referred to as *race face*. If you weren’t a road racer – someone who pays an entry fee, pins a number on their back, and has lots of racing war stories, you might be identified by racers as a *Fred*. A Fred is a reference to bike riders who didn’t shave their legs, wore calf-length wool socks, had a mirror on their helmet to see other riders and traffic behind them, and in short, didn’t look like real racers – in other words, they are oblivious to the unspoken rules of roadie culture. Racers have cool equipment. Their bicycle components are made out of expensive, light metal alloys or carbon fiber, or the old classic stuff that identified riders as old-school. Real racers wear all the right clothing, like custom made racing kits with their local club names printed on them, and have lots of racing war stories in their CV’s. Roadies often referred to Fred’s as *nice-dayers* because they only rode on nice days, had no regular training regimen and as a result, were so easy to identify. They sat upright on their bikes, their chains often squeaked begging for lubrication, and if you looked close enough, they often gripped their handlebars with such force their knuckles were white. This was because they were nervous riding their bikes. Real racers often don’t smile or say hello because they wanted to appear tough and serious. Until you earned a position of respect among successful local racers you were often treated like dirt. Once you
attained a level of status among racers by obeying the roadie cultural practices, riding strong and winning races, you might just be adopted as an insider.

Race face can be witnessed as the uninviting, unfriendly, mean look racers convey to other racers at the start of a race. It’s a threatening posture of strength, resilience and confidence; the look of a warrior going to war. Once you had attained a respectable rank, people talked to you – even some of the elite cool guys. Wearing a race face is an expression used in lots of sports where athletes act like they are at war with the world. It’s partly a way to say to others – look out, I’m a tough guy and you will respect me. The problem is, it takes a while to learn when to take off your race face mask.

Wearing race face and not knowing when or how to take it off created problems in my life off the bike. After several years of racing and training, I started to get good at this sport. I was winning races, or finishing most of them in the top ten in fields of 50 to 75 other racers. I had made a reputation for myself among the local amateur road racers. The self-confidence I built in my skills as a bike racer had a flip-side: I was mean and nasty just like the other road race warriors I respected and emulated. My children’s friends were afraid of me – somehow this “look” – the race face – transcended me in ways I had not intended. Fortunately, I have a fairly well-developed gift of reading people and I knew, partly, what was happening. It became a point of tension in my life – doing something I loved and was good at – but that took me from other loves I had in life, like other sports and spending time with my wife and children. I was on the bike training 16 – 20 hours a week and racing twice or more times per week. I felt guilty not training – like I would lose something valuable if I missed a day on the bike. The race face worn with a good reason behind it took a lot of care and maintenance. Some of that maintenance came through the way a cyclist was able to be resilient, strong and hang in by hammering while suffering.
The Social Connections to Pain and Suffering

I can recall clearly a 40K Pennsylvania State Time-Trial race up in the Poconos where I rode so hard that by the last kilometer, I was seeing bright purple flashes of light throughout my peripheral vision. It was much like looking through a tunnel. To prepare for this race, I calculated how fast I needed to ride to break a one-hour finish time (which was the measure of success by amateur athletes). Other racers often would ask your time, not your overall place after a time-trial. What they were actually asking was, did you break an hour? Other racers often knew your time even though you never spoke to them - news traveled quickly in our local racing community. Other racers whom you never met would know your name because winning or placing well in the season’s weekly race results became fodder for gossip and conversation. To prepare for a time trial, I wrote my splits (time for each leg of the time trial – out and back) on a piece of paper and taped it to my top tube (part of the bike that connects the handle bars with the saddle) so that I could check to make sure my cycling computer, which showed my current speed, agreed with where I needed to be at specific points in the race to break an hour finish time. Being able to suffer physiologically for an entire hour on my bicycle helped me establish my reputation as a bike racer, and through it, I often was given unearned respect and courtesy during group rides with other cycling enthusiasts. For example, when riding on bicycle club rides with cyclists who often do not race, I was given a free ticket to the front of the peloton. Typically, a rider had to fight to get to the front with the stronger riders. Learning to endure pain is largely how I developed racing success and a reputation among my social community of racers.

The theme is, the sooner you get “into the zone” the easier it is to begin to ignore the pain. The “zone” becomes familiar and can be your friend when you’ve been there frequently. Average cyclists avoid it because it hurts. Your body tells you so, so you stop. It’s like the red-line on a motorcycle’s tachometer. You get there and then try to maintain your physiological best
effort. If you go over that red line, you risk blowing-up, which results in the inability to maintain your riding pace due to oxygen debt. Most experienced racers are probably within one to two percent of one another’s physiological abilities, but it’s the suffering one can endure in the very hard efforts in racing that makes them winners. Shutting off the pain of riding hard comes through ways of coping, concentrating and learning to embrace it. You count things, like your breath cycles or pedal revolutions, or you simply stare in concentration at the rider’s wheel in front of you and promise yourself you won’t let it get away. Distractions from pain helps you endure and focus, and it shifts your perspective away from the suffering. Once you’re in the zone, things start to produce numbness all through the body. Often, it’s just getting to this point that is most difficult. Some days, however, you just know immediately when you start riding that it’s going to be a bad day. Your legs feel clunky like they’re full of cobwebs or your peddling motion feels more like squares than circles.

The start of a race is often very difficult. Riders intentionally try of start out hard to shell the weaker riders. This strategy narrows the field to the elite, strong and perhaps safer riders. Crashing on your bike hurts, so going hard at the start of a race can be a way to eliminate less experienced riders who are often the cause of crashes that can take them out along with others when they misjudge a corner or when they accidentally touch wheels with another rider. I discovered when warming-up for races that if I intentionally blew myself up several times before a race, that the strategy made it easier to endure these fast, hard starts at races.

I learned the most about my bike racing ability racing at the velodrome in Trexlertown, PA. Track racing is similar to road racing is some ways, but has a unique style of its own. Track bikes have a single, fixed gear and no brakes. This is for safety. The track is a 333-meter oval with 23-degree banking at opposite ends of the oval. Racers ride in such tight groups, that if someone hit the brakes, the whole group would probably crash. Having a single gear with no brakes means that you have to use your leg power to both accelerate and slow down your bicycle.
I knew I had developed a great deal of fitness spending several years accumulating 8,000 miles on my road bike and in lots of races. But track racing is used by roadies to build leg speed. Leg speed helps you finish races when it comes time to set up for the finishing sprint. Peddling a fixed-gear track bike at speeds of 36-40 miles per hour has you turning the cranks 160-180 revolutions per minute. I got really good at track racing partly because of my natural abilities, partly because I had great fitness and partly because I could spin a gear fast with my short, powerful legs. One summer I accumulated enough points on the track throughout the season to be invited to a race with the professional track racers on Friday night. People paid for tickets to enter Friday Night Races at the velodrome. The feature race at the end of the evening was a 100-lap metric 10-miler that was so fast, I couldn’t control the saliva coming from my open mouth. My mouth was open gaping wide the whole race just trying to breathe. None of the muscles in my body seemed to be working except for my legs. I was semi-conscious and numb most of the race gazing through glassy, half-open eyes refusing to quit. I couldn’t imagine being up front trying to score points during the race. But the cheers from the crowd – the stands were packed! My usual races were on Saturday morning – it was hot and sweaty sitting in the infield waiting for my next race. No one was in the stands watching Masters Track Racing at the Velodrome on a Saturday afternoon. But on Friday -the bright lights, huge crowd and the darkness of the night all seemed to spark more energy deep inside, and as a result, I was able to hang with the pros that night.

Balancing my Relationship with my Bicycle

At the height of my bicycle racing, I was racing 40 to 50 races per season. The training required to be competitive in the races had me logging 200 – 250 miles per week. I rode six days per week, sometimes seven, but I allowed for recovery days each week. Your legs feel like mush after you race hard, and some racing events I attended I raced up to three times per day, or 75
miles at speeds usually averaging close to 30 miles per hour. Recovery was as important to racing as training. I would often plan to eat immediately after a hard, long ride or a race even though I wasn’t always hungry. From what I had read in books about racing and in talking with successful racers, the window for such benefits was an hour after exercise. I would elevate my legs after rides to facilitate the ease of vascular circulation to carry away toxins, fluids and lactate produced from physical exertion. I adopted many other practices during my daily and weekly routines that started to crowd my life, not merely riding and racing my bike, but with planning and maintaining my bike for races.

**Time and the Bicycle**

Friday evenings usually had me packing a bag for Saturday road races right after I finished my daily training ride. My bag was stuffed with race clothes, the special lightweight wheels I used for racing and other items I needed for races. Isopropyl alcohol to wipe road grime off just after finishing my race. Spare tools for things that happen to your bike unexpectedly. A beach chair to watch other races between your own races. Electrolyte replacement fluids, energy bars, change of clothes for the ride home, the list was pretty long. Racers frequently live out of the trunks of their cars on weekends during the racing season, so they often just leave all the stuff they need for racing there throughout the season. Preparing for races was often repeated on Saturday nights on weekends when there were races on both days. As general practice, I would wash my bike, oil the chain, tighten the cleats on my racing shoes and inspect all of my bicycle’s moving parts. My diet as a racer had me avoid greasy, fried foods, sugary snacks and limit my alcohol consumption. The sport absorbed more time than just training and racing, it had me limiting other things in my life that I loved.
I usually had to say no to my friends who wanted to go out on the town for a night during weekends. I usually said no to invitations from my colleagues at the high school who planned paycheck-day happy hour days after school on a Friday evening. For more than 20 years, my life was built around bicycle racing and training. I spent so much time with the people I rode with, that all of my friends were bike racers. How can someone who has a problem bringing balance into their lives gain an understanding of that imbalance from hanging around people who have the same problem? We all support one another, live (almost) with each other, spend so much time racing and training together, and never quite look in the mirror long enough to realize that something in your life is broken. But sometimes things like balance in your life breaks. Cyclists, like other athletes of immersive sports have difficulty creating balance in their lives, they are often so enthusiastic about their sport, they lose site of the other important things in their lives like their job or their families. Athletes’ one-track mindedness results from their compulsion to keep their fitness for fear they may lose their rank as a winner in their social communities.

The [In] Visibility of Addiction

Some of my racing friends are single. Quite a few are divorced because they had no balance in their lives and their spouses couldn’t deal with it. They gave them ultimatums about free-time, responsibilities around the house and looking after the kids. A few lucky guys had wives who supported them because when they came back from rides, they were happier and better partners to them and their children. My wife on many occasions when she sensed stress or anxiety in me or when my temper was short would say “why don’t you go out for a bike ride?” Her generosity in sharing me with my bike prolonged the inevitable – I had to realize that the sport was absorbing me – it was more than being absorbed in the sport. My wife’s approval of my spending so much time racing and training only made finding balance in my life more invisible.
My kids were growing up right before my eyes, and at moments I worried that I had distanced myself from them spending so much time on my bike. It’s a tricky thing, balancing life with all of the hours required for racing and training, traveling and packing, planning and checking, fixing and dieting. And like most addicts, you may be the last to recognize your own problem.

I had a special assignment in my high school teaching position for almost 20 years. I would arrive earlier than my contracted time to monitor students in the lobby who were waiting for the first school bell that allowed them to be in the hallways on their way to their lockers and homeroom classes. In exchange, I was allowed to leave after the last bus left the parking lot at the end of each school day. This allowed me to jump in my car, drive 45-minutes home, run in the house and change, grab my bike and water bottles, and dash off for the River ride. If I missed a day, my mood would sour and I was pissed off the rest of the evening. None of my other colleagues ever mentioned a word to me, but later, years later, I had known that I had shirked some of my duties as a teacher. I was not available after school to help students. I became invisible at the end of the school day. I purposely made sure I had no after school meetings, and I tried to the best of my abil

The Paradox the Co-Present/Other Cyclist-Teacher

Riding a bike made me healthier than most of the teachers I worked with. I often observed teachers sitting at their desks when they taught. They sometimes had a far-away look in their eyes that seemed to come from overwork and a sedentary life-style. Riding a bike every day
seemed to give me more energy, enthusiasm and happiness because it brought balance into my life. Whatever happened in my daily two-hour bike riding routine that took me 40 miles through the countryside of my county, somehow rejuvenated me on a daily basis. I never got “burned-out” like some of the guys who spoke so negatively about their teaching jobs in the faculty room at lunch. It appeared to me that they had mastered their craft of teaching, but were stagnated through the boredom brought through their daily routine. Immersive sports such as cycling seems to have a paradoxical effect. One would think that expending all the energy required to ride 40 miles every day would make a person tired and bring less energy to all that is required in a day of teaching. But in my experience, the ability to shift my perspective completely away from teaching for two hours every day had me approaching each teaching day with more energy, enthusiasm and a meaningful presence in my job which helped me connect to my students. I always waited for the moment it would happen to me – burnout, boredom and frustration – just as the other teachers said it would. But I never became cynical, tired or feeling like I had made the wrong choice becoming a teacher. It was during a family trip to the beach one summer that I realized that bike racing had absorbed much of the time I should have been spending with my family. In one moment, I realized that bike racing had absorbed me, and that my life was in fact out of balance with respect to my family and other things I wanted to have in my life such as pursuing other sports, hobbies and social relationships with people outside my social circle of bike-rider friends.

**Finding Balance with the Co-Present Bike**

I bought a surfboard at the beach in southern New Jersey. A 10’0” Mark Martinson model Robert August longboard. I did it on a whim, because surfing looked fun. So, I put out a huge chunk of money for the board, knowing if I invested the bucks, I would learn to surf.
learned to surf that summer by watching guys from the surfing beach in Stone Harbor, NJ. I soon was able to take my board out through the waves, just sit on it and watch the surfers from past the breakers. Before long, I was able to stand and take short rides in the broken, foamy waves. And then the curl – new waves have no foam, and they are quiet and you can sculpt them with the rails of your board – up and down until it fades out or gets too close to the beach. But I often felt guilty that I wasn’t riding my bike. I thought about the fitness I would lose if I took on another hobby. How many miles would I lose, I would ask myself, by surfing or going to a concert or going camping for the weekend? These thoughts were often present in the back of my mind, but I would choose to do the right thing and put in those miles. And then I had an epiphany. A distinct moment when I realized that I was no longer in control of my life. It was like someone flipped on the light switch. I couldn’t make those thoughts in the back of my mind go away. I remember exactly moment as well as the place I was standing. I realized that the balance in my life had disappeared. Racing had taken so much of my time and energy that I had not allowed myself any chance to explore other things that were important to me. That’s when everything changed.

I didn’t quit racing, but I slowed down in order to spend more time with my family and to do things that I felt brought enjoyment to my life. I think racing helped me build confidence in myself and I had come to peace with not having to feel like I constantly needed to prove myself to everyone. I remained busy, always moving never sitting for long periods. My wife would see me sit on the couch for five minutes and get up when something else came to my mind. She would roll her eyes and laugh. “Just sit down, why don’t you?” The real beauty was being home thinking to myself, I can do whatever I want! Peace. Rest. I never lost the passion for riding my bicycle. I still ride to yoga practice, to my job on days when it suits me and with some of my close friends on the weekends. I find myself apologizing to people for the aggressive, competitive person I had become as a roadie. Presently, in my role as a researcher, I now have the opportunity to examine how my understanding of embodied learning through my coursework has not only
influenced my understanding of my racing experiences and of cycling culture, but also how it has shaped my identity.

The coursework I have taken as part of my dissertation program at Penn State University has not only allowed me to understand that the human body is important in shaping meaning, but it has also inspired me to reflect on my learning experiences as a bicycle racer and to investigate how other cyclists’ make meaning through their bodies. As I reflect back on my racing experiences, I realize so much of the learning I gained resulted from non-dialectic forms of communication. It has been a very different kind of knowledge than has been brought through my learning through a positivist perspective in my career in science for over 35 years, but it has been exciting to discover that other members of my cycling community have related to my embodied bicycle experiences as they shared their own stories brought through this research opportunity. The bicycle, as an object of my embodied learning was central to this investigation of my meaning-making experiences that resulted in important changes to my identity and has served as the grounding point to discover how other racers also learn through the embodiment of objects in the sport of amateur cycling.

**Organization of this Dissertation**

This opening chapter, essentially serves as a prologue to this dissertation and grounds the reader in my own experience and how I came to do the study. The remaining chapters of Part I, focus on the more traditional components of the opening chapters of a dissertation: Chapter Two provides the academic background to the study and its purpose and research questions; Chapter Three provides a detailed review of the literature that informs the study, while Chapter Four provides a detailed discussion of the methodology. Part II of the study, which is constituted by Chapters Five through Ten, provides narratives of the six participants in this narrative study. Part III is made up of Chapter Eleven and Chapter Twelve; Chapter Eleven provides a summary of the
themes of findings across all the narratives, where Chapter Twelve draws conclusions in light of
the theoretical framework of the study and suggestions for research and practice.

Because there may be terms used throughout this study that are unfamiliar to the reader,
before moving to Chapter Two, here I provide a definition of terms.

Definition of Terms

Several terms used throughout this research require definitions. Below, I offer the
important terms to help clarify the language used in this research and to frame aspects of the
study found in subsequent chapters.

*Body schema* - the unconscious awareness of our body's position as we physically move
through space. This can be extended to include objects that we use with familiarity such as a
bicycle or tools.

*Cycle sport* - Includes various physical activities using bicycle as part of competitive
sport. Road racing, bicycle moto-cross (BMX), time-trialing, track racing and mountain biking
are variations of cycle sports.

*Criterium* - A style of competitive bicycle road racing usually limited to a circular route
of a mile or less in length, where a group of riders belonging to various teams, race for a fixed
number of laps.

*Embodiment, Embody or Embodied* - These are terms used to refer to knowledge which
we gain directly through the peripheral receptors of body rather than through conscious thought
processes. In other words, through immediate felt-sense rather than through reflective self-
consciousness. Emotional, spiritual, affective and motor sensory awareness are part of this more
holistic way of knowing (Tobin & Tisdell, 2016).
Hardman - A slang term used in cycling to refer to racers who train in adverse weather conditions especially rain, cold temperatures and wind.

Peloton - A term used to refer to the mass of riders riding or racing together.

Pre-reflective or Pre-reflectivity - An action of bodily awareness or movement done without conscious thought. The skills we develop using tools or other material objects that are used with great frequency may no longer require our conscious thought, but may become part of our brain’s programmed reflexes and our lived sense or pre-reflective sense of the body and its surroundings.

Rider-bike Assemblage - A specific term developed through this research to refer to the co-joined human body and bicycle. The term draws from Deleuze and Gutteri’s (1980) term agencement and refers to the way the body is connected to outside entities.

Suffering – In the context of bicycle racing, the ability to tolerate pain (both episodic and over time) in order to perform well in the sport. Retired professional cyclist Bob Roll argues “suffering is the coin of the realism of cycling” (“What Does It Mean to Suffer,” 2017, para 6).
CHAPTER TWO: INTRODUCTION AND STUDY PURPOSE

Objects, fused to us
Moving in symbiosis,
Changes our lived-world

The poem that begins this chapter illustrates how engaging in movement through the use of objects that become part of our experiences lead to changes in our perceptions of the world. It invites readers to consider how objects which surround them and are used in their routine practices can make their experiences meaningful, in part, because they are connected directly to them through the corporeality of their bodies, not just through consciousness. The term lifeworld (lived-world) in the poem refers to the “expressive unity” of the body in learning process with the world and the things that surrounds us (Merleau-Ponty, 1962, p. 206). The conscious use of language alone is not the only way we gain meaning through our experiences in sport (Heywood, 2015). In the last chapter I discussed my personal experiences with meaning-making, and how the role of my relationship with the object of the bicycle and my relationships with other riders affected my identity by drawing on an autoethnographic approach to set the context of the study.

As noted in the last chapter, my study investigates the relationship of the bicycle and its rider in learning in bicycle racing. In this chapter, I first provide background to the problem, primarily based on the scholarly literature. Next is the problem statement, purpose statement and research questions. A brief overview of the theoretical framework of the study follows, and then an overview of the methodology of the study and a consideration of the significance. The chapter ends with a discussion of the assumptions, limitations and strengths of the study.
Background to the Problem

Given that the study focuses on the embodied learning of the cyclist in a racing situation in relation to the bicycle and other riders in the context, there is significant literature and research that informs this study. While this literature will be discussed in more detail in Chapter Three, to begin to set the context, I first briefly discuss the embodied learning of amateur bicycle racers in a social context, largely from the perspective of adult learning theory. Next, I discuss the external factors that affect bicycle racers’ embodied learning. Given the limitations of studies specifically in adult learning and of bicycle racing, I consider some of the literature from leisure studies related to learning through sports.

Embodied Learning and Amateur Bicycle Racers in Context

The potential embodied learning of bicycle racers needs to be considered in light of the work on embodied learning within the field of adult education, and then the context of the learning of amateur bicycle racers.

Embodied learning in adult education.

Embodiment in adult learning theory examines how we engage with learning through our bodies that draws from our feelings, emotions and affective abilities (Freiler, 2008; Merriam & Bierema, 2014; Swartz, 2011). The term *embodiment* has been used in a variety of ways across a diversity of literature bodies as Freiler (2008) explains in her discussion of the term, and it is often not well defined. As a result, its use in literature has led to confusing and often undefined translations of its meaning (Rohrer, 2007). Because of the scarcity of empirical studies exploring
embodied learning in sport in adult education, I have broadened the scope of my research to include sociological and psychological bodies of literature.

Embodied learning has been the subject of analysis in adult education only since the last decade of the twentieth century (Merriam & Bierema, 2014). In noting the confusion of defining of the terms “somatic” and “embodied” learning, and trying to clarify the terms for the field of adult education, Freiler (2008) summarized that while “somatic” typically refers to the physical body, the term “embodied learning” more typically refers to “a more holistic view of constructing knowledge that engages the body as a site of learning, usually in connection with other ways of knowing (for example, spiritual, affective, symbolic, cultural, rational)” (p.39). Research in embodied learning in adult education has produced a limited number of published data based studies specifically in adult education (Sodhi & Cohen, 2012; Tobin & Tisdell, 2015). A few authors in the field (Freiler, 2008; Tobin & Tisdell, 2015) draw on the philosophy of the body of Merleau-Ponty and psychologist Eugene Gendlin who emphasize the importance of the role of our individual unique human perceptions in shaping the meaning we make from our learning experiences.

While there is a larger body of conceptual literature than empirical studies on the topic of embodied learning in the field of adult education as noted by textbook authors (Merriam & Bierema, 2014) or in edited collections (Lawrence, 2012), the literature in the field overall establishes the importance of learning through the body and the foundation for this research. Thus far, however, the literature is limited to focusing on individual learners, and does not consider to any great extent the social context, and the role of objects in relation to embodied learning. Hence, there is a gap in adult education research which specifically examines learning through the body in cycle sports, the role of the social context, and the role of objects. In the remainder of this section I focus on a look at the context of amateur bicycle racers in a social context.
Amateur bicycle racers in social context and in leisure sports.

As discussed in Chapter One, amateur bicycle racers and cyclists in general spend many years conditioning their bodies in order to perform at a competitive level in the sport of bicycle racing. Athletes utilize the meaning of the experiences from their bodies while riding alone or in large groups to gauge their level of fitness and push their physical limits in order to improve their performance. Their individual or collective experiences can produce both physical and emotional sensations their bodies produce during exercise. Rhythmic sounds such as their breathing cycles may help cyclists remain focused in concentration during long, hard physical efforts (Allen-Collinson & Owton, 2014). Additionally, sensations such as the harmonic rhythm of the motion of repeated pedaling revolutions has been found to produce important meaning through changes in athletes’ individual identities (Spinney, 2006). For example, in Spinney’s (2006) study of cyclists climbing Mt. Ventoux (elevation 6,273 ft.) located in the Alps of France, riders experienced embodied, kinesthetic meaning in their bodies through riding their bicycles. Athletes were able to gauge their progress pedaling up the long mountain ascent through “an array of controlled sensations and practices forming a strategy geared toward achieving (their goal) through the character and meaning of particular places” (p.727). The findings of his study suggest that athletes’ can foster change in their identities through how they feel, live and “ultimately create meaningful spatial relations” through the embodiment of their experiences (p. 709). Findings from other studies show that emotional experiences that result from pain or fear also lead to changes in an athlete’s personal identity and affect their lives outside of sport (Simpson, Post & Tashman, 2014; Shipway, Holloway & Jones, 2012). For example, athletes who learn to embrace the self-imposed physical and mental discomfort produced through exercise bond socially with other athletes who share these physical sensations in “pain communities” (Shipway, Holloway & Jones, 2012, p. 268).
The findings of these studies imply that cycling road racers may be able to use their physical and emotional experiences in a similar way in order to gauge their present physical performance abilities and limitations as a result of the knowledge they gain through their body. Their experiences may also be influenced by objects such as their bicycle as well as the other riders (and other contextual influences, such as the objects in the road, the weather, etc.), and the cyclist’s physiological and social makeup that influences her or his perception. Accordingly, experiences with pain, fear, and the harmony of motion and rhythm, whether shared or individual, may also guide their progress in physical development.

The body of literature from leisure studies directed to embodied learning through sport establishes several important constructs that shapes this research, which potentially offers further background and understanding of how athletes learn and use their bodies. As several recent studies indicate and will be discussed further in Chapter Three, the result of learning through the body may lead to changes in their individual and social lives (Brymer & Schweitzer, 2012; Brymer & Oades, 2009; Brymer and Gray, 2009). For example, in their study of extreme sports, Brymer and Schweitzer (2012) found that fear interpreted by athletes to be meaningful and constructive events, leads to self-transformation. Extreme sports are broadly defined as sports that involve great risk where death or serious injury may result from an athlete’s mistake (Brymer & Schweitzer, 2012). Additionally, in an earlier study of extreme sports, Brymer and Gray (2009) found that athletes’ risk-taking behaviors lead to “deeper more positive understanding of self and place in the environment” (p.1). This learning involves the specialized sensory pathways of our peripheral nervous system that brings information from both internal and external environments.

Clearly, engaging the body in sports such as in bicycle racing, presents athletes with learning opportunities to bring awareness and understanding to the meaning they make through their immersive experiences as indicated in the studies discussed above. Furthermore, the experiences have been found to be important to participants’ learning of the character and
meaning of the landscapes or its context (Spinney, 2006). Athletes describe the meaning in their experiences metaphorically as a “dance with nature” in instances where rhythm, harmony and the fluidity of prolonged muscular actions were integrated into their bodily movements (Brymer & Gray, 2009, p. 3). Brymer and Oades’ (2009) research on participants’ experiences embodying danger through sport suggests that embodiment of fear presents athletes with important ways of learning. Athletes have experienced permanent epiphanies as the result of connecting with an aspect of themselves brought through their relationship with forces in the natural world that may result in injury or death (Brymer & Schweitzer, 2012). Thus, the “thrill-seeking” athletes of extreme sports criticized by others for purposefully taking dangerous, unnecessary risks have been found to experience valuable learning opportunities situated in nature (Brymer & Gray, 2009, p. 2).

By bringing awareness to the role of the body through the leisure sport of bicycle racing, we may add to our current understanding of how our emotions, affective abilities and feelings are influenced by the objects and people with whom we share our learning experiences. In the following section, I discuss several of the external influences that facilitate the embodied learning of cyclists.

**External Environmental Influences of Cyclists’ Embodied Learning**

Bicycle racers’ embodied learning is not only influenced by what happens inside the body, but also by external influences. This study will focus on two primary external influences: the social engagement system in light of polyvagal theory, and the bicycle itself as an embodied tool of the cyclist. While these influences are detailed in Chapter Three, an overview is provided here.
Polyvagal theory, the social engagement system and embodied philosophy.

Porges (2011) argues our body’s sensory neural pathways, especially the visual path, are linked to our Social Engagement System (SES) and constitutes an important way we are able to embody stimuli pre-reflexively, or before we consciously think about them. Porges’ theory explains in part, how athletes are able to keep in touch with their dissociated bodies during periods of physical and emotional stress via the vagus cranial nerve connecting the body and the brain. The vagus nerve can bring feelings of calmness in healthy people and bring awareness of the importance of rhythmical movements in athletes through collaborative exercises (Porges, 2011). Porges (2011) developed his Polyvagal Theory (PVT) as a result of his quantitative research in affective neuroscience examining heart rate correlates that result from psychological manipulations (Porges & Raskin, 1969). His findings expand our present understanding of the antagonistic effects of our parasympathetic and sympathetic divisions of our autonomic nervous system by indicating the SES is able to control our rapid heart rates that result from triggers such as emotional stress. According to Porges, (2011) the vagus cranial nerve is able to fine-tune heart rate variability (HRV) that results from emotional stressors by acting as an “active brake” (Porges, 2011, p. xiii). Its effect can “physiologically stabilize an individual by means of interceptive visceral awareness, as well as social interaction” (Porges, 2011 pp. xiii-xiv) The SES then, acts as an unconscious physiological nervous system mechanism that can stabilize our fight or flight arousal of our nervous system through our social interactions with others. We can visually see evidence of this process unfold in others through their facial expressions.

The SES “serves as a gateway to broader somatic experiences” (Heywood, 2015, p. 22). Heywood (2015) posits immersive sports such as CrossFit which demand high intensity exercise in a socially supportive setting, are examples of how the SES may influence our learning. CrossFit is a sports-like, branded fitness regime that utilizes a pre-planned, physically high-
intensity programs of exercise in a socially supportive communal setting (Powers & Greenwell, 2016). Branded fitness programs draw from the social benefits of communal practices and are led by a coach or instructor. Studies which have examined immersive learning through CrossFit programs have found that it leads to the empowerment of disenfranchised individuals, increases the focus of athletes’ attention spans and produces sensations of rhythm during moments when they are deeply immersed in their activity they describe as being “in the zone” (Heywood, 2015, p. 26).

Although Polyvagal Theory and Merleau-Ponty’s philosophy of the body (discussed to some degree in the last chapter) arise from quite different epistemological perspectives, they both share similarity in their affirmation of the human body’s integration to our collective experiences. Furthermore, both are inclusive of the role of shared experiences in learning through meaning-making. As Merleau-Ponty notes in one of his last works The Visible and the Invisible (1969), self and others are both paradoxically intertwined, there is no alterity, and yet both are different. “There is a reciprocal insertion and intertwining of one in the other…a strange adhesion of the seer and the visible” (p. 138-139). Both Merleau-Ponty’s (1962) philosophy and SES embrace the value of human interconnectivity through our embodied, collective experiences. Finally, both theories share unity through their sum-is-greater-than-each-of-its-parts approach to the value of our body’s interconnectivity to the world around us. Through a constant back-and-forth dialogue between our body and our world, we learn through our experiences and “the relationship between thought and matter is placed in conceptual tension such that thought is matter and matter is thought” (Dewsbury, 2011, p. 151). In other words, learning takes place directly within the physicality of the world where our experiences unfold and our brain has the plasticity to change as a result of the multitude of connections we gain through them (Malabou, 2008). By expanding our understanding of learning through immersive sports such as bicycle road racing, as the sport incorporates embodied experiences through both individual and shared, collective pathways, we
may broaden our understanding of the role of the body in the field of adult education. In addition, as bicycle racing is immersive, examining the social aspects of the sport may help us understand the importance of embodied learning in community settings.

Amateur bicycle racing is a team sport. As such, team members typically compete as a group in order to strategically gain control during races, making use of both voluntary and involuntary muscles. Porges suggests (2011) that messages from involuntary muscles reach the brain through an alternate neural pathway than do voluntary muscles, and are controlled by our SES. He further notes the “muscles of the head and face influence both the expression and receptivity to social cues can effectively reduce or increase social distance” (p. 189). The effect can reduce psychological distance to others around us and acts as a filter that “can influence the perception of the engagement behaviors of others” (p. 189), and may partially explain how group relationships develop among athletes in socially-based sports. Indeed, it is clear that groups of bicycle riders and other athletes who engage in leisure sport develop personal relationships as part of tightly-knit communities (Simpson, Post & Tashman, 2014; Brymer & Schweitzer, 2012; Spinney, 2006). These relationships may develop using unspoken dialogues, bodily gestures and “new ways of understanding” unique to these sports and may create bonds between athletes that others non-athletes may not understand (Dutkiewicz, 2015, p. 27).

Many immersive sports offer athletes the opportunities to communicate with others using nonverbal cues delivered through the body’s affective sensory and motor pathways (Porges, 2011). Athletes may be able to recognize or even anticipate when another athlete is in need, or predict the next move of a competitor using non-verbal body cues. Through the vast amounts of time they spend in their sport learning to recognize embodied gestures, or bodily movements, they may experience a personal competitive advantage or possibly be able to help other athletes by working cooperatively, increasing the efficiency of achieving their common goals in sport. But it is important to consider not only the relationship cyclists have with each other as part of their
potential embodied learning, but also the relationship of the cyclist with the object of the bicycle itself.

**The cyclist-object relationship and actor network theory.**

While material objects that we use in learning are usually ignored, they possess real qualities that may affect and shape our perception of them and our cohabitation with them (Olsen, 2010). Olsen (2010) argues the material objects we encounter on a daily basis “have been marginalized—even stigmatized—in the social sciences and philosophy during the twentieth century” (p. 2). Objects that surround the sport of cycling have been found to bring relevancy and meaning to athletes (Simpson, 2006). Individuals experience meaning through the objects that surround them in the natural spaces where their sport unfolds, but their impact on the social aspects of cycling have not yet been thoroughly described (Simpson, 2006).

The rider and bicycle may be considered to be co-joined as a temporary integration of an artifact to human, and thus represents a unique manner through which we can enhance our current understanding of embodied learning. British sociologist Tim Dant (2004) suggests that a closer examination of human relationships with objects can cast light on how “objects actually shapes the form and content of social action” (p. 61). Dant (2004) challenges us to bring more understanding to the properties of objects, not as mere affordances, but fused in many cases of human experience as a single, co-joined entity, or assemblage, that may help us understand how they exist differently than they do as separate entities (p. 74). The “symbiotic” relationship that results from this co-joined assemblage affords us a new perspective in which we can bring understanding to the context of our strong, embodied, emotional elements in our sporting experiences (Brey, 2001, p. 1). Athletes describe themselves as being “in-tune” with their environment through their association with the objects that surround them in sport (Brymer &
In Gray’s (2009) study of rhythm and harmony brought through extreme sports, one respondent indicated that her sense of intuition coupled with the objects that surrounded her helped her “to move in the environment, rather than controlling the environment” (p. 7).

The term *assemblage* originates in part from Gilles Deleuze and Félix Guattari’s (1980) use of the term *agencement* in *A Thousand Plateaus* describing the human body’s interconnectedness and fluid nature with outside entities. Assemblage Theory has since developed as a framework for the analysis of social complexity (Phillips, 2006). The term assemblage has been used in Actor Network Theory (ANT) examination of power structures within social networks. In Deleuze’s philosophy of sense of nature, history and politics in collaboration with Felix Guattari, he employs coupled terms such as *becoming-bike* to refer to the unbounded flow between bodies that touch or come close together” (Raunig, 2010, p. 8). Raunig (2010) argues “the more time a person spends on a bicycle, the more their personality mingles with the personality of the bicycle” (p. 8). A mutual reciprocal affect exists with the bicycle and the bicyclist. Bringing awareness to the role of such object-human assemblages to Embodied Learning Theory, such a perspective affords us understanding of assemblages as person-things which potentially may take on new properties not currently addressed in educational theory. Furthermore, such assemblages present us with new opportunities to understand how routine and habitual actions may lead us to be more aware of the people with whom we work and learn.

In their discussion of ANT, which is a form of social theory that considers the role of object in social networks, Fenwick ad Edwards (2011) in speaking of learning in general, argue the role of objects in learning have largely been unaddressed in the field of adult education. Olsen (2010) makes a similar observation, and posits the Cartesian philosophical framework from which our modern educational system has been built treats the things that surround us as “passive and inert” while it regards the mind to be “active and creative” (p. 64). Yet objects are not only an extremely significant part of our context of learning, they have a key role in shaping our learning.
The physicality of objects, as they exist in the unique settings where we engage with them, may also add meaning and quality to our social interactions with others with whom we engage in sport.

Although ANT traditionally has explored how objects and humans shape our social actions as they exist as separate actors within the networks where we find them, our interactions with objects as co-joined entities or assemblages and how they shape our society have not yet been explored from a sociological perspective (Dant, 2004). As the bicycle represents a technological tool that becomes temporarily attached to cyclists when they ride, understanding its role in the networks where riders engage in sport may help us understand its role and position in the process of adult learning.

Problem, Purpose and Research Questions

As noted above, there has been much conceptual discussion of Embodied Learning Theory in textbooks and edited collections (Lawrence, 2012; Merriam & Bierema, 2014), and a few published data research studies in the field (eg., Sodhi & Cohen, 2012; Tobin & Tisdell, 2015); however, there is a paucity of published data base studies based in adult education. Similarly, while there are research studies in the field of leisure sports, these do not focus on the processes of learning, and also tend to focus on the examination of the body in sports, in relation to its scientific effects. Further, the literature and studies that do exist focus on individual learners, and has not thoroughly considered the social context of embodied learning and the role of objects in the acquisition of knowledge. Hence, the purpose of this study is to examine how adults informally learn through engaging with their bicycles in the sport of amateur road racing, and to understand how this learning has shaped their individual and social identities.

The research questions guiding this study are:
1. What role does the bicycle play in the embodied learning and felt-sense experiences of participants?

2. How does the sport of amateur bicycle racing shape participants’ individual and social identities?

3. How do participants describe the ways the sport of cycling has helped them build their social networks?

**Overview of Theoretical Framework**

This study explores how bicycle riders develop an awareness of knowing through their body with their bicycle and socially situated within a group of other riders. The theoretical frameworks for this study draw from both Embodied Learning Theory in adult education, (especially the discussions that connect to the philosophies of Maurice Merleau-Ponty and Eugene Gendlin) and to Actor Network Theory.

**Embodied Learning Theory and the Philosophy of Merleau-Ponty**

As noted above, existing literature in embodied learning in adult education focuses on the individual learner, not on the social context, and does not deal with the role of objects. This study is informed by the embodied adult learning literature in adult education especially to those discussions that draw on the work of Merleau-Ponty, and Eugene Gendlin. As others have discussed, Merleau-Ponty establishes the importance of the pre-reflective (Mazis, 2008) and the role of “the body as the ‘‘pre-reflective’’ vehicle that gives rise to reflective experience” (Tobin & Tisdell, 2015, p. 218). Gendlin’s (1996) theory of felt sense refers to Merleau-Ponty’s description of our body’s pre-reflective ability to perceive the world through our body. Merleau-
Ponty argues that all communication through spoken words, writing, artistic expression or bodily gestures are brought first through the affectors of the peripheral nervous system of the human body before we are able to process it through consciousness. Amateur bicycle racers may co-experience phenomenon with other racers using their pre-reflective abilities that are manifested in their bodily gestures.

Many existing philosophical approaches to adult learning are based on the conscious acquisition of knowledge and largely disregard the role of the body’s perception in learning (Merriam & Bierema, 2014). The literature that does exist on Embodied Learning Theory in adult education offers a more holistic approach to such learning opportunities by drawing from a learner’s feelings, emotions and affective abilities as connected to the body (Freiler, 2008; Merriam & Bierema, 2014; Swartz, 2011). But these discussions tend not to look at the role of objects in embodied learning. Merleau-Ponty’s (1962) philosophy touches on this however, and offers some further insight. For example, Merleau-Ponty (1962) notes how a blind man’s walking cane is employed by its user as an extension of the body to extend tactile perception and becomes incorporated into his body schema. Actor Network Theory also offers further insight here.

**Actor Network Theory**

Unlike embodied adult learning theory in its various forms, Actor Network Theory focuses directly on the relationship between the actor (learner) and objects, which Dant (2004) refers to as the assemblage. As discussed above, on a larger sense, ANT is a way to approach knowing and meaning making through networks of interrelated things, known as the socio-material and ideas (Sayes, 2014). As will be discussed further in the next chapter, ANT also serves as an important lens for understanding power structures (Sayes, 2014; Fenwick & Edwards, 2011; Latour, 2005; Law, 1992). ANT emerged as an analytic approach to the social
sciences during the 1980’s resulting from the work of Bruno Latour, John Law and Michael Callon in science and technology studies (Fenwick & Edwards, 2011). It is a controversial social theory that gives nonhumans such as physical objects or things agency, or position in how our sociological “assumptions, ideas, or stipulative claims [may be] incorporated into analysis;” (Sayes, 2014, p. 44). As a methodology, education has largely ignored the role of ANT to bring insight to the way adults learn outside of a few exceptions (Fenwick & Edwards, 2011). Using ANT as a part of the underlying theoretical framework of the study will bring the relationship of the human with the object as an assemblage to the fore to potentially offer further understanding of how adults learn through their bodies in relation to an object and to other people in a social context. The remainder of this chapter provides a brief overview of how I intend to conduct the study, and a consideration of the study’s significance, limitations and assumptions.

**Overview of the Research Methodology**

In order to understanding how amateur road racers, learn informally through their bodies while racing their bicycles, I will employ a qualitative research process by making meaning through narratives. The design of the study proposes to use both an authoethnographic and narrative inquiry approach to examine the subculture of amateur road racer’s experiences of embodied learning while racing or training in the sport of cycling. I offer a detailed description of the design of the study in Chapter Four, but summarize it here.

**A Qualitative Autoethnographic Narrative Study**

Qualitative research at its heart aims to uncover the meaning and experiences people have in their lives by using a systematic inquiry approach (Merriam, 2009). As such, the primary
means of data collection in qualitative research are interviews, observations and analysis of documents and artifacts that make use of words and images. In qualitative research, the researcher serves as the primary instrument for the collection of data and its analysis (Merriam, 2009). In my research, employing a qualitative inquiry approach based on interviews, observations and potentially the use of documents and artifacts will allow me to understand the experiences of road racers’ learning through their body while riding their bicycles from their unique perspectives. In what follows, I provide an overview of the research type proposed for this study: autoethnography and narrative inquiry, and then a brief overview of the study design.

As will be discussed further in Chapter Four, there are many different types of qualitative research. I plan to make use of a combination of two types of qualitative research: autoethnography and narrative inquiry in order to consider both my own experience (autoethnography), as I did in the last chapter, and to make sense of the stories told by cyclists’ embodied learning experiences while riding their bicycles, by collecting narratives from them. By combining narrative inquiry with an autoethnographic approach, this study affords me the opportunity to explore the unique sub-culture of road racing through my own cycling experiences and those whom I interview (Jones, Adams & Ellis, 2013; Chang, 2008). The autoethnographic component of the study, touched on in the first chapter, examines my personal stories of racing and training as an amateur road racer in order to gain a broader perspective of the shared meaning-making experiences among amateur bicycle road racers. Further, I will examine how the stories of other racers’ experiences racing and training with their bicycles intersect with my own experiences that have unfolded over the context of time and place, which is what makes the study partly autoethnographic (Merriam & Tisdell, 2016).

The primary focus of my study is to examine the informal embodied learning experiences and stories of other amateur bicycle road racers, from a narrative perspective. Using a narrative inquiry approach, which focuses on the story itself and how the teller tells the story, in this
research will offer me an appropriate way to examine cyclists’ first-person stories and to interpret meaning and context from their unique perspectives as they unfold through time (Candinin & Connelly, 2000).

**Study Design**

The study began with my own examination of the impacts of racing and training bicycling experiences on my identity, as discussed in the last chapter. In beginning this way, my intent was to provide a broad autoethnographic perspective of the unique sub-culture of amateur road racing. In so doing, I used an evocative approach revealed through my own experiences in order to “display multiple layers of consciousness.” In the future chapters, in light of gathering data from my participants, I will connect my own and their stories to the larger, cultural aspects of amateur competitive cycling (Bochner, 2000, p. 739).

Qualitative research typically makes use of a purposeful sample of participants chosen according to specific criteria (Creswell, 2013), so the narrative participants of the study were purposely selected using a unique sampling approach (Merriam, 2009). There were six participants in the study, chosen according to purposeful criteria as discussed in detail in Chapter Four.

Interviews were the primary source of data for the narrative portion of this study, and each of the six participants were interviewed twice, totaling 12 interviews. Observations and analysis of documents and artifacts are often a source of data in qualitative research (Creswell & Poth, 2018). While further details of how documents and artifacts were used in the study are detailed in Chapter Four, participants were asked to bring documents such as scrapbooks of race photographs or three-dimensional artifacts that have personal significance to their second interviews. I also invited participants to write a Haiku poem to capture their first-person
perspective of their cycling experience, which were participant generated documents. Data analysis, dependability strategies and ethical issues are outlined in Chapter Four.

Significance of the Study

This research will provide a significant contribution to the field of adult education in several ways. Presently, there is a scarcity of studies that examine the role of how the artifacts we use in sports becomes part of our embodied experiences. Although evidence of the importance of objects and their need to be included as indicators of human perceptual awareness has been established in sociological bodies of literature, there is a scarcity of empirical studies that contribute to this understanding (Dant, 2004; DePreeter & Tsakaris, 2009; Olsen, 2010). Research which specifically examines how the relationship between object-human assemblages may be used to facilitate embodied learning in immersive leisure sports is presently lacking in the literature of adult education. Understanding how objects contribute to a learner’s meaning-making experiences may help shape our broader understanding of the role of objects in adult education.

A second point of significance in this study is examining embodied learning through an intersubjective-interpersonal co-experienced context. While the existing literature of embodied learning in the field of adult education is largely conceptual with few empirical studies, the existing studies focus on individual learners (Merriam & Bierema, 2014; Lawrence, 2012). Examining the social context of embodied learning in bicycle racers may provide insight in how athletes develop connectivity to their sporting community through their somatic, emotional and affective experiences. Several studies examining the importance of participation with other athletes through sport suggests that their shared experiences of strong sensory or emotional stimuli promoted strong bonds with others and strengthened their social identities (Weedon,
Bringing further awareness to the role of embodied learning by examining the social aspects of bicycle racing may help us understand the importance of body language in learning in a broader sense.

Thirdly, this study offers significance to the field of adult education by examining how bicycle racers learn and develop through their body as individuals. Athletes who participate in immersive sports are able to gauge their own fitness levels through the sensory information they receive from their bodies during exercise (Allen-Collinson & Owton, 2014). Physical sensations produced during intense exercise such as the sound of their breathing, pain and rhythmic movements of their body foster changes in athletes’ individual identities (Spinney, 2006). Furthermore, athletes who experience emotional sensations such as fear from taking risks, camaraderie and mental discomfort during sport have promoted changes to their sense of identity and sense of self through how they feel, live and make meaning in the places where they participate in sport (Simpson, Post & Tashman, 2014; Brymer & Schweitzer, 2012; Shipway, Holloway & Jones, 2012; Brymer & Gray, 2009). Bringing greater awareness of how athletes learn and develop as individuals through their strong emotional feelings, physical sensations and rhythmic bodily movements through sport may help us understand how they impact their personal growth, development and authenticity in other aspects of their lives.

Finally, by adding an ANT perspective to this research, which is inclusive of physical artifacts such as the bicycle in creating context and meaning of a cyclist’s embodied learning experiences, we can understand how the bicycle becomes part of the way they make meaning as they engage in the sport of cycling. In this way, this study will contribute to the growing body of research of embodied learning in adult education and ANT. More specifically, the study provides an understanding of how the bicycle, through a subjective-objective dialogue with its rider, shapes the form and content of cyclists’ meaning-making through their embodied experiences in road racing (Dant, 2004).
Assumptions, Limitations and Strengths

As in any study there are several assumptions embedded in the design of this study. There are also limitations and strengths that are detailed here.

Assumptions

1. Cyclists informally learn through their embodied experiences while racing or training.
2. The informal embodied learning experiences cyclists gain through racing shapes their identity.
3. The bicycle is important as a tool to access embodied learning in road racers; a partner in a give-and-take dialogue whose contributions need to be articulated.
4. Researchers make further meaning of experience, by comparing their experience with others who have had similar experiences. Discussion of both provides a greater understanding of the phenomenon and provides greater transparency of the research process and adds to the richness of the findings.

Limitations

As this study utilizes a qualitative research approach to understand and describe the unique nature and elements that surround how cyclists draw from their experiences in learning, there are inherent limitations and biases that I wish to identify (Merriam & Tisdell, 2016).

1. As the primary instrument for this study, my personal experiences as a cyclist may introduce bias into the way I collect, analyze and interpret study data or shape the resulting findings. However, the autoethnographic component of the study will make my experiences and biases visible. This can have the paradoxical effect of accounting for any bias in the study. I will address this further in chapter three.
2. This study employs a criterion-based purposeful sampling technique that is restricted to a local population of cyclists who have at least five years of experience riding or racing in large groups. This unique nature of the study’s population poses a limitation to generalizing the study’s findings outside of its context, though as it is often discussed, qualitative research is not intended to be generalizable but is rather intended to discuss the particular in depth (Merriam, 2009).

3. The study’s sample population does not represent a diverse cross-section of our American society and draws primarily from other people who spend large amounts of their free time cycling.

4. The data collection time frame also presents a limitation, as it will be confined to a single, three-month riding and racing season.

**Strengths**

In spite of the noted limitations, this study also presents many strengths. First, the nature of the self-selected subculture of amateur road racers as a study population presents an opportunity for me to investigate how learning is shaped in this unique aspect of our American society. Further, the authoethnographic component of the study and my extensive tacit knowledge as a bicycle racer is a strength of the study. But it combines that tacit knowledge with an analysis of the experience of others. Adult education has not yet described how embodied learning in immersive sports like cycling influences our individual and social identities and this study offers me the opportunity to add to our existing understanding of learning through the body in sport.

Second, this research may help clarify the importance material objects serve to learning. Objects bring meaning and relevancy in learning through their context and their relationship to the spaces where learning takes place. By bringing clarity to the importance that objects serve cyclists through their experiences in amateur road racing, I hope to contribute to our existing
knowledge of the importance objects serve in learning and more broadly to the field of adult education.

Third, this study examines several elements of human embodiment that may be unique to cycle sport and may expand our current understanding of the role of movement, rhythm and harmony to Embodied Learning Theory within the context of adult education and development. Fourth, this study may uncover strategies to develop new, meaningful and healthy relationships in our community through group sport or serve to strengthen our existing relationships.

Finally, by drawing on the diversity of perspectives of cyclists’ experience, knowledge and meaning, this study offers me personal satisfaction in the chance to investigate my current understanding of the rich, complex dialogues that are embedded in and around cycle sport communities.

The significance of the study as well as its assumptions, limitations, and strengths as outlined here offer a summary of the study, and lays the foundation of the study. The next chapter provides a much more detailed discussion of the literature that informs the study. It’s to that literature that I now turn.
CHAPTER THREE: LITERATURE REVIEW

Objects become one
With the flesh and help us
Create new learning

The Haiku that opens this chapter illustrates that objects help us make sense and relevance to our experiences that can lead to new learning opportunities as they become part of our body schema. The bicycle-rider is just one example where objects that become part of their habit memories facilitate new learning experiences in their lives (Bergson, 2004). This study examined how athletes’ use of the objects they use in sport became part of their learning experiences. More specifically, this study focused on how bicycle racers in relationship with their bicycle and other riders learn through the body in the intersubjective context of the leisure sport of amateur bicycle racing. The study also examined how their experiences helped shape their individual and collective identities and perhaps create new social networks. As such, the specific research questions that guide this study as it relates to embodied learning in bicycle racers included:

1. What role does the bicycle play in the embodied learning experiences of participants?
2. How does the sport of amateur bicycle racing shape participants’ individual identities?
3. How do participants describe the ways the sport of cycling has helped them build their social networks?

This chapter offers a review of data-based and conceptual/philosophical literature that intersects with leisure studies, actor network theory and embodiment in adult learning theory and begins by contextualizing the study in relation to the field of adult education and its related philosophies and perspectives on embodied learning, particularly in regard to the notion of
objects. This brief discussion sets the stage for the discussion in the second section of the chapter which discusses the primary theoretical framework of the study: Actor Network Theory. To some extent the study is influenced by those in adult education who are influenced by the philosophy of the body of Merleau-Ponty and psychologist Eugene Gendlin; these influences are briefly explored in the third section. Lastly, is an in-depth discussion of the data-based studies and literature on learning through the body in adult education and leisure studies.

The Need for a Consideration of Objects in Embodied Adult Learning

The existing body of literature on embodiment in adult learning theory examines how the body acquires knowledge through feelings, emotions and affective abilities (Freiler, 2008; Merriam & Bierema, 2014; Swartz, 2011, 2012). Presently, adult or embodied learning does not consider the role of objects in “motor meaning;” that the human body expresses meaning through its kinesthetic movement (Merleau-Ponty, 1962, p. 141). Fenwick and Richards (2011) argue objects not only bring value to our learning experiences, but transform them (p. 13). Objects used by athletes in sports may potentially help athletes acquire knowledge through their bodies as they are often used with such routine that their bodies are inclusive of the objects in their movements (De Preester & Tsakiris, 2009). Dant (2004) refers to this phenomenon as a “symbiotic” assemblage of the object as it is incorporated into human perceptual awareness (p. 75). Callon, (1991) drawing on the work of Deleuze & Guattari (1980), refers to the assemblage of an object and human as “hybrid” noting that the relationship is temporary and quickly reversible (p. 139). Ihde (2002) notes “We are our bodies – but in the very basic notion one also discovers that our bodies have an amazing plasticity and polymorphism that is often brought out precisely with our relations with technologies. We are bodies in technologies” (p. 137). With this in mind, objects such as a bicycle, surfboard, kayak, or tennis racket potentially may be used by athletes as
extension of their body schema and may represent an important manner through which learning may be facilitated individually as well as in social context with others.

**Expanding the Research on Embodied Learning**

Currently, there are only a few existing data-based studies in the field of adult education that examine the role of the body in learning, (Sodhi & Cohen, 2012; Tobin & Tisdell, 2015). Freiler (2008) defines embodied learning “as a way to construct knowledge through direct engagement in bodily experiences and inhabiting one’s body through a felt sense of being-in-the-world” (p. 40). While Embodied Learning Theory in adult education has emerged as a method of analysis in the last few decades of the 20th century, more consideration and research needs to be considered on the topic in relation to adult learning.

Further, expanding this search of literature related to how adults learn in different contexts, such as through sport or athletics, and an examination of psychological and sociological studies, yields further insight into how athletes learn through the body. As Allen-Collinson (2014) notes, the psychological and sociological bodies of literature have produced a “veritable effervescence of interest in sporting embodiment in recent years” (p. 592). Allen-Collinson (2014) cites several studies which specifically examine the phenomenon of an athletes’ sensory experiences as they are engaged in sport and argues “by taking a wider, more complex and holistic view of human movement and the sporting experience” we may understand “what it means to do sport in a human way” (pp. 604-605). This is an important consideration in relationship to bicycle racing and the relationships with objects and other cyclists.

Riding a bicycle is a learned skill that involves the entire body. Through the complex physical tasks of pedaling, steering and balancing a bicycle, the cyclist is able to move the bicycle forward (Hopsicker, 2006). The body also plays an important role in receiving information to
monitor one’s spatial position. This aspect of awareness arrives in the body through the numerous sensory receptors in our peripheral nervous system before it reaches conscious awareness (Martini, Bartholomew & Nath, 2018). Thus, embodied learning is regarded as holistic because it considers our consciousness to be integrated with our emotional, physical and sensory abilities (Merriam, Caffarella & Baumgartner, 2012; Paparo, 2015; Küpers, 2013). Through this important manner of incorporating knowledge through the body schema, bicycle riders constantly are able to gauge and adjust their position to properly balance and control the bicycle. The environment through which cyclists ride also brings meaning and relevancy to their experiences. The feel of the wind in the face, the rhythmic sensation of the cadence of prolonged circular pedaling motion, the smells that arrive through the olfactory senses that may be specific to the landscapes through which cyclists’ ride, and even sounds from living things or through spoken voices of other riders, are all immediately apparent as embodied meaning to the cyclist which begins through the corporeality of the body.

Conversely, cyclists often push themselves into moments where they experience physical stress and pain in order to improve their ability to race with other competitive cyclists. For example, during especially difficult efforts ascending steep hills or to maintain racing speed with other riders, cyclists must often push their physiological limits to stay with other racers. Competitive cyclists have often experienced a crash during a race that results from risks associated through seeking to gain position in the peloton where they are racing, or simply from the result of poor judgment or lack of skill. And yet, they often muster the courage within themselves to pick themselves up and continue to race if they are able. Through this integration of physical movements, conscious thoughts and embodied awareness, athletes experience a mode of learning that involves multiple aspects of their person (Howden, 2012). As cyclists become more experienced with riding a bicycle, they develop additional skills to ride in close proximity to other
riders or with large groups of riders. The technological devices developed to make cycling more efficient also require the rider to learn new skills.

Technological advances in cycling equipment often require the development of unique skills. Clipless pedals for example, anchor the cyclist's special cleated shoe into the pedal and offer greater efficiency in pedaling. The spring-loaded bindings in the pedals fasten to a specially designed shoe so the rider is able to generate power throughout the entire circular motion of each pedal stroke. Learning to use clipless pedals, for example, may often result in new users falling off the bicycle several times before mastering the skill to clip in when moving forward and clip out when stopping the bicycle. Modern road bicycles also have many confusing gear combinations that the rider must learn to select in order to pedal efficiently on flat, level roads or climbing and descending steep hills. Navigating through busy urban settings in close proximity to other cyclists also requires unique, special skills. Riders must be able to safely share the road with other cyclists and motor vehicles while often simultaneously passing through busy intersections, reading road signage and watching for pedestrians. All of these examples of embodied learning can test a rider's level of skill and experience and provide them with valuable opportunities for enjoying the leisure sport of cycling. Expert riders who have had many years of riding experience may be so familiar with the skills they use in riding a bicycle that many of them may be performed with little conscious effort. The bicycle, then, becomes an appendage of the body as it becomes part of our body schema and in essence, a new sense organ for the rider. Thus, it creates opportunity for new awareness and experiences as well as a way to explore new learning opportunities. This learning may take the form of individual growth or social development.
Tools and the Body Schema

Currently there is a scarcity of empirical studies examining the use of object artifacts in understanding our human body schema (DePreeter & Tsakaris, 2009). DePreeter & Tsakaris, (2009) define the term body schema as the unconscious awareness of the body's position as one physically moves through space. Humans have thousands of sensory organs that lie outside of the brain and spinal cord (central nervous system) which bring sensations via the peripheral nervous system. The sensory organs imbedded in the joints of the limbs are known as proprioceptors. Golgi tendon organs as one example, reside within skeletal muscles and provide a sense of spatial awareness in human movement. The stimuli are delivered to the spinal cord and back to our muscles and joints during reflex actions through the voluntary, somatic division of this aspect of the nervous system (Johnson, 2016). Sensory awareness produced by the organs of the peripheral nervous system occurs in the brain when the spinal cord relays these signals to the cerebrum. The term “body schema” is used in several disciplines such as psychology, neuroscience, philosophy, sports medicine and robotics. The English neurologist Henry Head first used the term body schema in 1920 to illustrate how the brain and peripheral nervous system are integrated together in order to bring perceptual awareness of body movement. In a recent review of empirical studies, Morasso, Casadio, Mohan, Rea and Zenzeri (2015), drawing from the work of Maravita & Iriki (2004), describe body schema as a set of fronto-parietal networks that integrate information originating from regions of the body and external space in a way, which is functionally relevant to specific actions performed by different body parts. As such, the body schema is a representation (felt sense) of the body’s spatial properties, including the length of limbs and limb segments, their arrangement, the configuration of the segments in space, and the shape of the body surface; it can also incorporate,
after suitable training, the spatial/dynamic properties of tools employed by skilled users (Morasso, Casadio, Mohan, Rea and Zenzeri, 2015, p. 1).

Most of studies Morasso, Casadio, Mohan, Rea and Zenzeri (2015) reviewed assess quantitative changes in tactile or visual-tactile processing via the brain rather than qualitatively through embodiment of body schema via sensations and bodily perceptions.

This study which focused on how adults learn through their bodily movements in group-based, leisure sporting experiences that is inclusive of the role of objects, has shed light to their importance in learning. Furthermore, this study helps to expand our understanding of the role of objects in athletes’ learning through the way they make meaning through their experiences in sport.

Although several conceptual works discuss the importance of objects to human perceptual awareness of movement (Dant, 2004; DePreeter &Tsakaris, 2009; Olsen, 2010), the works discuss how humans sense bodily movement through activities inclusive of objects. However, a research gap exists in which studies examine the unique learning that athletes gain as they are co-joined to the tools they use in sport (DePreeter & Tsakaris, 2009). Actor Network Theory (ANT) has traditionally examined objects and humans as separate entities within their “heterogeneous networks,” (Law, 1992, p. 380). Objects serve humans as necessary stabilizers of the human collective (Callon & Latour, 1981; Latour, 1986; Latour & Strum, 1986; Strum & Latour, 1987). However, in examining objects and humans as co-joined entities, we may discover emergent properties that arise as a result of their fusion. This research draws upon the philosophies of Eugene Gendlin’s theory of felt sense and Merleau-Ponty’s phenomenology of perception. It also utilizes the frameworks of Embodied Learning Theory in adult education and the sociological perspective of ANT to examine how the relationship between object-human assemblages may be used to facilitate embodied learning in immersive sport of competitive bicycle racing. These various perspectives are discussed in more detail next.
Theoretical Framework: Actor Network Theory

Presently, approaches to learning are primarily based on the conscious acquisition of knowledge and focuses on cognition as it exists outside of the body (Merriam, Caffarella & Baumgartner, 2007). In other words, researchers largely disregard the role of the body's perception in learning. Such orientations to conscious and cognitive processes in learning have been widely accepted and implemented across our society to verify and validate learning through observable evidence. Although it is important to be able to understand a person's growth and development through such methods, its sole use in learning may neglect other beneficial ways to facilitate a learner's acquisition of knowledge. By providing the individual with more holistic opportunities, which include learning perspectives, which integrate the embodied dimensions of our understanding through our perceptual experiences, learning may be more active and memorable. Hence it is helpful to explore philosophical and theoretical orientations that would help facilitate a consideration of unconscious or semi-conscious approaches to learning through the body. This study is rooted in Actor Network Theory as it relates to embodied learning in adult education. In what follows, I first describe ANT as a theoretical approach to objects. Next, I highlight key concepts relevant for this study, particularly the concept of the bicycle-rider assemblage. Third is a consideration of how this assemblage shapes social interaction, and finally what it suggests for sustainability.

What is Actor Network Theory?

Actor Network Theory (ANT) is about the multiple factors involved in social situations which are inclusive of material objects and humans and are examined through a non-hierarchically manner (Latour, 2005). ANT emphasizes how networks of relationships exist
between material entities, humans and through their association and maintenance achieve specific objectives (Richardson, 2012). ANT first emerged as an analytic approach to examine how objects interact with humans in the social sciences (Fenwick & Edwards, 2011). Bruno Latour, John Law and Michael Callon employed ANT to understand how humans and objects “come to be assembled, to associate and exercise force, and to persist or decline” through their study of science and technology (p. 1). ANT attempts to uncover relationships among objects and humans known as socio-material that exist simultaneously as both material and conceptual constructs (p. 1). The term *material semiotic theory* has been used synonymously with ANT, as researchers describe the relationship which treats objects, such as a bicycle and its rider for example, as important parts of the social network of cycling. ANT regards objects as an important part of social networks and challenges human consciousness as the only issue of relevancy to the nature of our society (Callon, 2007). Sayes (2014) argues nonhumans bring agency to the networks where they are embedded because they “add something that is of sociological relevance to a chain of events: that something happens, that something is added by a nonhuman and that this addition falls under the general rubric of action and agency” (p. 145) Nonhumans, according to Sayes, (2014) “do not have agency by themselves, if only because they are never by themselves” (p. 144). ANT has been regarded to be a controversial sociological theory because it affords nonhuman objects agency (Shaffer, 1991; Collins & Yearly, 1992; Khong, 2003). However, through its unique methodological approach to objects that surround us that “ANT supports the critical view of technology as value-laden, thus encouraging the critical engagement with a technology in social environments (Mlitwa, 2007, p. 54). By recognizing that non-living objects in our world play a role in societal dynamics, greater understanding and value may be brought through their influence, position and importance through their associations with living members of their social networks (LaTour, 2005). ANT’s ontological assumptions provide an approach to
understanding how objects and humans are embedded and bring influence to one another as they exist as part of the same social fabric.

ANT is a constructivist approach to epistemology that attempts to understand networks of interrelated things and ideas, but does not necessarily ask how and why questions behind them (LaTour, 2005). The theoretical perspective of ANT shares several similarities with Foucauldian theory in its view of power structures within social networks (Kerr, 2014). It differs however, in its view of non-human actors as part of social networks. Kerr posits ANT delves much more deeply into the role of nonhumans "as actors in the workings of society" (p. 86). ANT exists as both a theoretical approach to understanding the associations between humans and objects, as well as a "detailed methodology" for which we may "understand the relationships between humans and non-humans in sport" (Kerr, 2016, p. xvi). As an example, although the bicycle is a non-living object, it may be viewed differently among different social groups. Kerr (2016) illustrates this phenomenon through a study in which Pinch & Bijker (1984) determined the bicycle was too dangerous to ride by women, and for the same reason was very popular as viewed by men. Through interpretive flexibility, the bicycle was interpreted differently among genders (p.2). The bicycle as an interpretive object that lies within the network of other objects and people in the sport of cycling has the potential to facilitate important shared, meaning-making experiences among groups of cyclists. The bicycle also promotes changes to cyclists’ perceptions of the world. The bicycle as an extension of the body, affords cyclists opportunities to witness the beauty of the natural environments through the corporeality of their body. The bicycle then, is a certain way of being: as an athlete, as being in nature and as being in power.

Latour (2005) describes a specific type of network involving power structure embedded as part of the structure of social groups. Power can be manifested in a social group as an action or the effect of living or non-living objects that are part of the network (Kerr, 2016). In addition, the use of technology can influence the network of power he calls a socio-technical network.
Furthermore, ideas such as historical and current discourses, uses of language and accepted practices can be folded into the network and be part of the power or agency that flows within them (Latour & Venn, 2002). Power flow through these networks involves *intermediaries*, which are non-controversial actors that behave the same way each time (human or non-human), and *mediators*, actants which disrupt the network by behaving unpredictably. As such, the bicycle as an intermediary conducts the flow of movement from the body and mediates or changes the power flow within cycling networks. ANT establishes the position and importance of objects as humans live in a world, not as individuals and separate entities, but part of a network where agency is shared by both people and the objects with which they interact as networks (Kerr, 2016; Latour, 2002). The overall effect of understanding the dynamics of power and agency through such an integrated and multi-layered approach could have important implications for this specific research problem, and in a broader sense, to our current understanding of adult education and development theory. But what is particularly important in this study is the way ANT highlights the role of objects as part of that network and their relationship to learning. Hence, ANT represents an important methodological approach to explore how objects and humans interact together in immersive sports like bicycle racing, and in what follows, I highlight key relevant concepts related to this notion of objects, and then go on to discuss the importance of the human-object assemblage in shaping social action and efforts at sustainability.

**Objects and Key Concepts in ANT**

In the next section of this chapter, I discuss the importance of objects in relation to adult learning and ANT by considering body schema, muscle memory and the rider-bike as an assemblage.
Body schema.

Although recent studies explore the use of prosthetic devices as tools that extend into the body schema (De Preester & Tsakiris, 2009; Berlucci & Aglioti, 1997) the tools athletes use in sports may potentially be integrated into the body schema. The tools may take the form of a bicycle, a surfboard, a kayak or canoe or even a fishing rod. As De Preester & Tsakiris (2009) note, tools become integrated to human perceptual awareness and thus become part of an athlete’s body schema. De Preester & Tsakiris (2009) cite the work of Berlucci & Aglioti (1997) in offering inanimate objects used habitually and with routine become incorporated into the body schema “that bear a systematic relation to the body itself, such as clothes, ornaments and tools” (as cited in De Preester and Tkakiris, 2009, p. 311). The inclusion of such objects represents a “temporary and contingent on the actual association between the body and object: when the cyclist dismounts from his bike, it ceases to be part of his body schema” (p. 311). Although De Preester and Tsakiris’s (2009) approach to body schema simplifies the experience of a rider and bike to a physiological description, Merleau-Ponty’s (1962) rich description of body schema acknowledges objects as part of our habit body, a way of “being-in-the world” (p. 55). Merleau-Ponty’s (1962) description of motor meaning involves objects when incorporated into the human body schema bring new meaning to us, not merely through consciousness, but as a vehicle of unique human expression. The use of objects as extensions of our body has been found to produce changes in our somatosensory cortex, which results in the tool being incorporated into our body schema (Cardinali, Frassinetti, Brozzoli, Urquizar, Roy, & Farnè, 2009). Understanding body schema helps establish a manner in which Embodied Learning Theory in adult education may be examined. Furthermore, as body schema also relates to the use of objects, its use also helps bring new understanding to the sociological constructs of ANT.
The concept of body schema is relevant to Embodied Learning Theory in adult education. Objects that become part of a learner’s body schema may help them acquire new skills by promoting new learning opportunities. By using objects reflexively, learners may potentially be more aware of their surroundings or the people with whom they interact. For example, medical professionals who routinely deliver subcutaneous injections may be more aware of their patients’ needs by not having to concentrate on the injection procedure. In addition, the reflexive ability of tool use may help individuals be more aware of events that may occur in the near future. Athletes who spend many years using objects in their leisure sporting activities become so familiar with them that they use them reflexively; through unconscious routine and habitual movement. As many immersive sports involve multiple domains of our senses and bodily movements, and as the objects athletes use are able to be used reflexively, it frees them to engage other aspects of their mind and body in order to make sense from their experiences and potentially bring change to their identity. Muscle memory plays an important role in our ability to disengage with conscious focusing on our riding skills, and may allow the body to engage with other aspects of the world in which we live.

**Muscle memory.**

Muscle memory is a type of motor learning in which the repeated use of certain muscles used during a task becomes integrated into our unconscious awareness and thus can be performed without conscious effort. This aspect of our learning allows for greater efficiency of the motor and memory systems (Krakauer & Shadmehr, 2006). Olsen (2010) cites the work of Henri Bergson’s (2004) use of **habit memories** to refer to memories that are stored in the body as dispositions and habits. Motor learning through muscle memory relates to Merleau-Ponty’s motor meaning as objects become integrated into our perceptual awareness. As cognitive memories are
recollective in nature, we live and act our habitual memories. They are not merely represented, but give us a way of experiencing lived meaning through our embodied experiences. Bergson (2004) cites Elaine Scarry's (1985) work on the role of the body in memory:

What is remembered in the body is well remembered. When a fifteen year-old girl climbs off her bike and back on at twenty-five, it may seem only the ten year interval that her body has forgotten, so effortless is the return to mastery (Scarry, 1985 as cited in Olsen, 2010, p. 8).

Although Scarry (1985) acknowledges the young girl’s skill memory in riding her bicycle, what is lacking is the meaning of play and sense of freedom and adventure the girl experiences as a result of her muscle memories riding her bike. Riding a bike may also be an important way we may facilitate other embodied experiences and learning through participating in leisure sports. Muscle memory, like body schema is an important way the body facilitates movement without consciousness. The pre-reflective sense of movement is an important aspect of embodied learning and may lead athletes to a felt sense of rhythm, harmony or engaging into emotional aspects of their sporting experiences. Reflexivity may also help us understand how objects become co-joined to athletes and may lead to further changes in their position within the social networks where they engage in sport.

**The bicycle-rider assemblage.**

The bicycle, in the literature, has been considered in social sciences from several perspectives (Smethurst, 2016; Kraft, 2005): as a commodity through which industrial capitalism has emphasized productivity; as a form of transportation that has resulted in greater access to mobility for working class men and women; and by offering a form of social and political freedom to people. What remains to be considered, however, is the role non-human
actors play in shaping our social and cultural understanding. Material objects have largely escaped a connection to AE Embodied Learning Theory and "remains the least understood phenomena of the modern age" and although they surround us in our everyday lives, “they are never given a thought, a social thought. Like humble servants, they live on the margins of the social doing most of the work but never allowed to be represented as such” (as cited in Olsen, 2010, pp. 1-2). Law (1992) discusses the importance of objects and states: “…almost all of our interactions with other people are mediated through objects of one kind or another (pp. 381-382).

Actor Network Theory (ANT) was discussed above as part of the theoretical orientation of this study. Here I more specifically explore the bicycle in particular as a tool used to extend the body in learning, and review the conceptual and empirical literature that seeks to reveal how the bicycle, as an object, has been used as an extension of the human body in ANT and in studies that draw on ANT. As noted above, Dant (2004) refers to the collaboration of human and object form as a rider-bicycle assemblage as it exists as a temporary and endlessly reversible connection of the body and object.

Presently there is a scarcity of peer-reviewed studies which examine athletes’ use of material objects in immersive sports and draw from ANT. Several conceptual articles were found which explore the role of the body in the lived experiences of cyclists. Thorpe and Rinehart (2010) argue objects used in “alternative” sports such as surfboards and skateboards “are not merely objects participants throw, kick swing or push; these are objects that define the very activity itself” (p. 1273). Kerr (2016), in citing Thorpe and Rinehart (2010) adds “participants do not see themselves as separate from the objects they use, but in participating in their activity, become one with it” (p. 13). Other articles discussed ways to challenge existing perceptions of current roadway use to be more inclusive to pedestrians and bicycles Doughty & Murray, 2016; Wilhoit & Kisselburgh, 2015; Blickstein, 2008). Unfortunately, there is an absence of literature, conceptual or empirical, in the field of adult education which relates the immersive sport of
cycling to embodied learning through the use of material objects, such as a bicycle that act as assemblages or extensions of the body in learning. Sociological research on cycling has received some attention that pertains to embodiment through the lens of ANT, but these articles are also scarce, and few specifically examine the bicycle as an object as a co-joined assemblage through which adult learning is explored. For the purpose of this research, I extend my review of scholarly literature to include other aspects of how humans and material artifacts that are assembled together shape our embodied learning experiences in order to establish background to my research.

Two themes emerged as a result of exploring the confluence of embodied learning and material objects through ANT. The first theme explores how object artifacts are used to shape human social interactions. The second theme explores promoting sustainability through collective action. I begin by reviewing literature in which the sport of cycling intersects with ANT. These two themes are explored in the next two sections.

The Human-Object Assemblage and the Shaping of Social Interactions

This notion of the human-object assemblage can shape social interaction. Kerr (2016), discusses material objects as part of the socio-technical network in the world of competitive cycling. Intermediaries such as the bicycle assure the desired action of racing can be accomplished. Skin suits, specially designed body-hugging stretch fabric clothing cyclists wear to reduce the effect of wind resistance acts in the network as an intermediary as well. Baggy, loose clothing then, would act as a mediator in preventing the desired action of cycling at the fastest possible speed upon the bicycle. One way individual riders may act as mediators is by purposely slowing the pace of the peloton. Intermediaries then, whether they are humans or objects, hold
power in disrupting the desired action of the network. Humans and non-humans work together in order to function and cause action within networks.

Kerr (2016) argues assemblages are not only an important part of ANT, but humans and objects they use in sport produce qualities of affect as they are assembled and neither the object nor the human would exhibit such qualities on their own:

The notion of the ‘assemblage’ is central to ANT. Essentially, ANT encapsulates the notion that ‘the whole is greater than the sum of its parts’ through arguing that combining humans and/or non-humans can create assemblages that have vastly different qualities and capacities from singular parts. This is easily understood in the case of sport, where athletes can be understood as possessing particular and often impressive qualities owing to the athlete-assemblage, consisting of a human plus a variety of technologies and training that transform the human into something surpassing normal human ability. For example, neither a human nor a pole is capable of independently jumping five metres into the air, but once a human with training uses a pole, they are transformed into an athlete-assemblage called a pole-vaulter, who can accomplish this task. (Kerr, 2016, p. 5).

The role of material objects that shape society has been largely overlooked (Olsen, 2010). The development of society focuses on things as "more and more of our tasks are delegated to nonhuman actors, and more and more actions are mediated by things" (p. 10). The first theme that emerged from my review of peer-reviewed academic literature search focuses on the role material objects play in shaping human actions. Few of the articles focus specifically on leisure sport, but I have broadened the scope of my review in order to further understand the phenomenon of embodiment of object-human interactivity. The embodiment of freedom, integration and interconnectivity of the body in sport, rhythm, and individual and co-constructed learning
emerged as a result of this exploration of literature, through which inanimate objects served as actors, part of the social network through which human actions were shaped. The social actions of actors in relation to objects in their networks were found to collectively help promote personal and social growth. I begin by exploring the embodiment of freedom as objects help shape social action.

Tim Dant (2004) posits the importance of new forms of social action introduced through the manner in which we use objects in our society. In his analysis of the co-joined automobile and driver, Dant (2004) argues both the content and forms of our social actions are impacted by objects, "yet has not yet been the focus of serious sociological attention" (p. 61). According to Dant, one limitation of ANT is that language has consistently been used to mediate the relationship between humans and objects. This may overlook aspects of how these relationships may change over time and through differing social context. Furthermore, he asserts "any attempt to explore how the human and non-human actors interact have been absent" (p. 69). Further, Clark & Chalmers (1998) in discussing Extended Mind Theory posits the mind extends beyond the constraints of the human skull into the environments where the “human organism is linked with an external entity (an object) in a two-way interaction, creating a coupled-system that can be seen as a cognitive system in its own right” (p. 50). Objects, according to Clark and Chalmers (1998) become actively part of the way we make meaning through a “here and now” coupled form of cognition (p. 51). What remains to be explored through ANT according to Dant (2004), are "the routine, every day, lived, embodied relationships between human beings and the material objects around them" (p. 71). We are habitually embodied with objects through which we may achieve mobility and thus a sense of freedom of will to move on our own. The assemblage of the bicycle-rider, a subject that has not yet been the focus of empirical analysis, may serve as a means to broaden the understanding of how a co-joined human and material object may potentially add important knowledge of how tools may be used as extensions of the body schema and also bring
relevancy to Embodied Learning Theory in adult education. For example, the embodiment of freedom facilitated through object-human assemblages, has been the focus of analysis among several recent conceptual and empirical studies (Kerr, 2014; DePreester & Tsakiris, 2009; Rhodehamel, 2008; Finchman, 2006). An important distinction must be made, however, to objects that are incorporated into the body schema compared with those objects which extend the body (DePreester & Tsakiris, 2009).

Objects that replace a body part such as a prosthesis used to replace a missing limb are instrumental in helping a person experience completion. In other words, they are non-corporeal objects that are meant to make people feel whole again. A sense of freedom is gained through autonomy as completion through their use of a prosthesis guides the owner in independent mobility. It must be clear, however that objects that replace a body part must be considered to be different than an object that is used in sport such as a bicycle, or a musical instrument used by a musician that is used for expression (DePreester & Tsakiris, 2009, p. 318). While the use of object artifacts has been found to promote a form of freedom through expression, they differ from objects that are incorporated into the body schema, as they are not part of the body's original motor and perceptual capacities. But used as extensions of the body, the object artifacts have been found to promote the embodiment of autonomy and the ability to move freely on our own will (Rhodehamel, 2008; Finchman, 2006). This important distinction must be made clear with regard to objects which extend the body; their use helps people who use them replace their abilities rather than promoting new awareness. A poignant example of how objects bring meaning to our experiences can be found in a study of women cyclists that examines how social factors viewed as tools influences the places where power structures unfold.

In a study of a social network of women road cyclists over age 40, Sirna (2016) posits the importance of habitus, field and capital as tools to understand physical movement and the body in the field of sport sociology. Drawing from the work of Bourdieu (1977), habitus is defined as a
form of social conditioning influenced by our race, class, gender and social and cultural norms. Its affect in a field is both durable and mutable as it reproduces historical practices in the present through embodied knowledge of our "gestures, perspectives, behaviors and tastes" (Bourdieu, 1984). Field influences habitus through the dialectic of meaning and is shaped by its composition and structure (Sirna, 2016). In other words, the physical places bring influence to where power structures manifest themselves in our society. Sirna (2016) describes capital as the power we hold in a field through our influence. The assets may be social, physical, or economic factors that we have which influence our position within the field. The bicycle then, helps facilitate social engagement with others as well as promotes our engagement to other non-human objects. This phenomenon helps bring important relevance and meaning to our lived experiences situated in the networks where they are found.

Maxime Schmitt, a friend and collaborator of members of the musical band Kraftwerk offers insight to how a simple bicycle ride afforded him and the band members a shift to their perspective and bring positive change to their daily hectic and busy schedule while recording music:

The bicycle was a perfect way of getting a lot of fresh air. We noticed that it was an anti-stress sport because it concentrated totally on the bicycle. When you ride a bicycle, you don’t think about the new album, about how we are going to launch it. We realised that during three or four hours on the bicycle, we were discussing things like, ‘Oh, you have new brakes’, ‘Oh, where did you get your handlebars? ‘Is the saddle well adjusted?’, or ‘What about the pedals?’, things that were only connected with cycling (Reid, 2017, p 118).

The importance of this theoretical perspective is revealed through the dynamic nature of the interactions of living and non-living actors within the field of our social networks. We can more fully understand the uniqueness and value of their nature and meaning through
opportunities that allow for learning and personal development through our lived experiences, which unfold in these networks. Our lived experiences promote changes to our perceptions of the world, to the cyclist, and the social structures in which these experiences take place as well. The cyclist, other riders and the objects in our world of riding are linked and integrated to the same network that informs the human experience, and perhaps the learning that results.

The bicycle is human-powered and affords the rider a sense of freedom through its ability to be ridden spontaneously. Additionally, the bicycle takes up very little space, so the rider-bicycle is able to navigate narrow spaces across a variety of terrains such as narrow alleys, trails and other public spaces that limit automobile movements. However, these affordances of freedom are not without risk. As the volume of automobile traffic in our urban public roadways increases, the danger to cyclists being injured or killed also increases. Cyclists are 14 times more likely to be killed or seriously injured than are automobile drivers (Finchman, 2006). Finchman posits the bicycle represents a "road to freedom" for riders insomuch as it helps them create a new relationship between their life-space and their life-time" (p. 221). Automobility by car is almost an expectation across our society. The social action of mobility through the use of a self-powered vehicle such as a bicycle is a choice we can make to experience automobility and freedom. Freedom to explore new places, freedom of expression through movement of the body and freedom in a literal sense: being outside among natural places and spaces. The experience of riding a bicycle may also lead to individual autonomy and foster improvements to our social identities by creating new ways to meet and interact with those with whom we share a bike riding experience. Additionally, Finchman (2006) suggests that bicycling, although a slower form of transportation than the automobile in highway settings, is often just as fast in busy urban settings. Additionally, the bicycle-rider allows us to be "autonomously mobile" and is not be dependent on the use of fossil fuels and contributing to greenhouse gas emission. (p. 221). It may be helpful to explore Finchman's (2006) conceptual analysis of the sense of freedom bicycle riders are able to
access as it may be embodied through object-vehicle assemblages. Empirical understanding of these assemblages may lead to further knowledge of the importance of the role of embodied learning through the interface of humans and technology in promoting positive social actions. Our embodied experiences brought about through assemblages with material objects may lead to future design improvements in public spaces that facilitate an increase in peoples’ social interconnectivity.

From an educational perspective, the objects individuals use habitually through routine practices play a role in the acquisition of knowledge. They connect us to the people and other things we use. Objects also connect us to the physical spaces where our co-constructed experiences unfold (Bengtsson, 2013). Bengtsson (2013) notes learning develops continually through adulthood, not merely through a linear sense, but through the interconnectivity of the objects we use and the world we live in. In other words, objects connect us in multiple ways to other things and people through the ways we use them. Bengtsson (2013) argues objects are also important to the context of individual change, growth and development as are the spaces, tools and practices as a result of our development. Bengtsson (2013) illustrates how tools are important in learning, citing an example of a person who has lost one of their senses. People continue to learn and develop as a result of a sensory loss, but the world around them also changes (Bengtsson, 2013). The interdependency of the world and the individual is often manifested through the way tools are "integrated with his/her own body as an extension of it" (Bengtsson, 2013, p. 49). Educational theories may be considered as tools and employed through planned curricula to extend the lives and the world of our students (Bengtsson, 2013). Gendlin (1978) argues that by focusing on bringing awareness to the information our body provides, we can extend our understanding of the relationships to our networks of interrelated things. For example, we may be more effective as educators in helping our students understand scientific theory by providing them a lived-experience that allows them to feel the meaning of centripetal by swinging
a bucket filled with water. The body provides the student with a felt-sense to understand why the water does not spill out of the bucket. The body can also be a vehicle through which students can gain understanding about scientific theories which are used as objects to help them gain understanding and awareness of environmental factors that affect our plant’s global health.

Embodied learning can be regarded as an object employed as a tool to help students understand scientific physical theories of motion, momentum and inertia such as can be seen grasping the axle of a spinning bicycle wheel (Kontra, Goldin-Meadow & Beilock, 2012). Employing the body in learning through "action leads to enhanced learning over passively viewing that action" (Kontra et al, 2012, p. 736). In other words, by bringing awareness to the role of the body in learning as we co-construct meaning with other actors in the networks where humans and objects intersect, our lived experiences can be more valuable and memorable. The study illustrates how embodied learning in education can be regarded as a tool that exists within a network of other actors and may help facilitate social action in others and is a social action in itself. It has been my experience as a teacher of the biological sciences that student-centered learning initiatives focus on engaging the body to promote interconnectivity with objects that we use to learn and among students using them. Engaging the body in learning promotes learners’ understanding of the interdependency of tools and the body to understand scientific theories and their relevance to the world they live in. Students’ social actions may be greatly influenced by the qualities of a meaningful and memorable education moment brought through the interconnectivity of the tools they use to explore new ideas in their development. Embodied neural networks employed in artificial intelligence research also illustrate how objects that are part of the human body and are associated with learning are interdependent upon one another and to the environment where they are cultured (Bakkum, Shkolik, Be-Ary, Gamblen, DeMarse & Potter, 2004).
Human brain neural networks are considered as actors within their environment, but traditionally, they are viewed only within the realm of their function: sending and receiving information, which has resulted from their chemical stimulation. Bakkum et al (2004), in their study of artificial intelligence, successfully demonstrate that through culturing a network of living neurons in vitro, neurons re-establish connections with other neurons around them without external input and within days, begin communicating with one another. Their findings illustrate that entities of the brain, body and environment are interdependent actors in the learning process. They exist as actants within a network of boundaries that are not clearly defined. Citing Damasio (1994), Bakkum et al (2004) argue "the mind depends on the complex interplay of the brain and the body, and consequently emotions and rationality cannot be segregated (as cited in Bakkum, et al, 2004, p. 14). Pierce (2012) examines improving scientific literacy through a conceptual model that views the importance of nonhumans as actors that exist within a network of students, teachers and citizens. He argues that through employing ANT pedagogy, students may develop their own views of science and not "continue to be at the mercy of experts and corporate stakeholders for defining the terms in which people heal, feed and educate themselves" (p. 83). Learners are able to embody meaning through understanding the interconnectivity of ethics, politics and power, which intersect as a network of factors that influence their lives. The findings of this study suggest that by employing a pedagogical approach that connects students to the world around them through the corporeality of their bodies, they can experience a deeper, more meaningful, lived-learning acquisition of scientific literacy. A further example of embodied scientific literacy can be seen in Pierce’s (2012) conceptual approach to mapping wild salmon networks as a tool to help students understand the dynamics of bioculture and genetic engineering.

Pierce (2012) argues that recent changes in bioculture have "fundamentally altered the boundary between nature and culture and the way the public understands both" (p. 83). He discusses the use of genetically modified salmon as a means of mapping actors involved in the
controversy of genetic engineering. He proposes that through mapping the network of actors involved in the controversy of genetically modifying wild salmon, students can pose clear research questions through which they can explore their ethical and political concerns. Through this emotional interconnectivity with their own lives, ANT becomes an "epistemological tool for creating a more appropriate form of scientific literacy" by focusing on "commonality instead of individuation" (p. 105). Learning (and education in general) may be regarded as tools through which our social actions may be influenced as the embodiment of its meaning may be sculpted within a network of actors. Although Pierce's (2012) conceptual model employing ANT as a pedagogical tool that may facilitate embodied learning among students, an empirical study may reveal further evidence that adds our understanding of their associations. Although Jderu's (2015) study of embodied learning social careers of motorcyclists and learning does not address scientific literacy, it serves as a poignant example of how networks of objects and actors intersect with bodily practices and thus is supportive of this research.

Motorcyclists’ learning develops through embodiment in social career stages, which take into account factors of their bodily practices and their embodiment of actions such as risk and their aging body (Jderu, 2015). Jderu (2015) argues through the analysis of a motorcyclist's free will to making voluntary changes to his/her social identity through risk taking, they embody an affirmation of the motorcycling culture. The affirmations can be seen as they modify their body symbolically as seen through tattoos or clothing, and to their identity as their motorcycling experiences promote changes to their personal history. The motorcyclists’ social actions become "re-signified in accordance with their new identity" (p. 420). Jderu (2015) provides an example that serves to illustrate the value of human affective experience as it intersects with objects that lie within networks of culture and practice can be seen in cycling networks which led to changes in the bicycling manufacturing industry.
Changes in the bicycling industry in the 19th and 20th centuries which, afforded greater mobility to those in the middle class, may have led to similar cultural affirmations of social identity among new riders. The culture of such manufacturer-led identities among motorcycle riders were evident in participant interviews with brand names like Harley-Davidson. Motorcycle riders personally identified with the Harley-Davidson logo and its symbolic meaning of strength, power and independence associated with the company brand name. Jderu (2015) discusses the tension created by the upward trend in our culture toward spare-time activities in which risk was a factor. Leisure sports such as hang gliding, skydiving, scuba diving and rock climbing have become popular among athletes despite a public agenda focused on reducing such risks in favor of living safely. Voluntary risk among athletes who use technology as part of their leisure sport may be a manner through which individuals may symbolically convey their social position to others through their social actions. The visual and symbolic representation of power through objects they use in sport, developed through technology, may convey their susceptibility to the risk of bodily injury to those around them. Others' perceptions of their strength and agency may be the root of such choices among athletes. While the risk of serious bodily injury from a crash on a motorcycle certainly results from physical factors such as speed and momentum, bicycle riders’ risks may be more likely to be associated to other network actors within their environments such as cars with whom they share public roadways. What remains to be discovered, however is the congruency of the development of social factors learned through risk among motorcycle riders with those among bicycle riders, which have yet to be revealed through empirical study. Next, I explore how the symbolic dimensions of the bicycle have been experienced by bike riders to promote sustainability.
Promoting Sustainability through Rider-Bike Assemblages

The bicycle-rider assemblage and ANT’s focus on how it affects social interaction have implications for issues of sustainability. The ability to use tools which promote greater human mobility can take the form of discourse that examines the relationship between physical things or objects and our cultural use of public roadways (Doughty & Murray, 2016; Wilhoit & Kisselburgh, 2015; Blickstein, 2008). These things are often unnoticed by the perspective of automobile users, but represent barriers to the inclusion of other forms of human movement such as with bicyclists and pedestrians. Several of the studies examine the relationship of cyclists’ experiences of collective action in order to increase alternative public roadway use. Bicycle riders represent both a material and a collective that can challenge existing power structures, take social action without organization, and help reconstruct the way we regard public roads as existing primarily for automobiles.

A key element driving the politics of mobility is the perception that we are able to move about by automobile as individuals (Doughty & Murray, 2016). The institutional governing bodies that plan how we move do so around a conceptual framework of morality, modernity and freedom (p. 303). Doughty and Murray (2016) argue analyzing mobility through the everyday and mundane needs of people in society, the discourse can “focus on how movement is a social and cultural practice in constant negotiation and (re)production” (p. 303). Furthermore, Doughty & Murray (2016) posit the value of spoken language in discourse has been over emphasized (Barad, 2003). What may be of greater value in the inclusion of alternate forms of movement on our roadways is bringing awareness to “material embodiment” as a non-discursive form of knowledge production (Doughty & Murray, 2016, p. 305). Doughty and Murray (2016) argue understanding peoples’ “subjective experiences and their situatedness is a prerequisite for making sense of mobilities” (p. 306). The bicycle, which has surged in use across bicycle friendly urban
settings, represents a subjective thing that becomes part of the fabric of discourse in some communities. In other words, bicycles promote mobility and facilitate our social interactions with other people around us. As a result, rider rates in these communities have increased 105% from 2000 to 2013 (bikeleague.org, 2016). This study intersects with this research in several ways.

First, the use of non-discursive language to negotiate access to roadway use for marginalized forms of mobility relates directly to the importance of embodied learning in accessing knowledge to facilitate change in our society. Secondly, this study relates to ANT and object-human assemblages as “objects are increasingly allowed their own place in the solicitations of a meaningful world” (p. 306). The bicycle represents an object which without rider, would garner no access to power to shift dominant ideological perspectives that roadways are for cars. We may follow Australia’s lead however, to begin such a change, in the creation of bike lane networks which allow marginal access to other forms of transportation.

ANT stresses the importance of objects, such as the socio-materials that make up the infrastructure of our cities and towns. As such, when these materials are combined with humans who use these materials in new ways, may change the normal routines of other people. An example can be seen in a study of bicycle commuters using a newly created bicycle lane created along a roadway which previously was designed only to accommodate motor vehicles in Tasmania, Australia (Vreugdenhil & Williams, 2013). The newly painted lines of the bicycle lanes allowed partial access to the roadway for cyclists as part of an infrastructure development project, and resulted in a hotly contested community conflict among cyclists and motorists. The lanes created access for bicycle commuters, but reduced the space available to automobile drivers. According to one automobile driver, the bicycle lanes became a safety concern by creating a “grid-locked, confused, dangerous obstacle course” (Vreugdenhil & Williams, 2013, p. 288). To the cyclists, the painted lines “defined how we are in a place and consequently the potential meanings in a place” (as cited by Spinney, p. 289). Attempting to bring spatial order and
cycling access to roadway use through the development of restrictive cycling lanes neglects inclusivity to both affective and embodied aspects of cycling. (Vreugdenhil & Williams, 2013). Findings of the study suggest the white-line-rider-driver assemblage was not perceived to be beneficial to either side of the debate. The findings also support the proposition that actors whether human or material reveal emergent properties when they are combined. This can be witnessed as a collective group of cyclists utilizes public roadway spaces. It is more than merely bikes on the roadway, they make a statement to motorists that they too, mean to be included as vehicular traffic. Automobile drivers may feel that bikes are toys and that they do not belong on the road (although they are considered vehicles by almost every state’s motor vehicle laws), by their presence, a silent social statement emerges from the collective of riders that presents itself differently. As ANT examines actors, human or material, as separate entities within the socio-material fabric of their networks, I would argue that by considering them as combined and co-joined, we may gain a valuable new lens to understand ANT. A final illustration through which promoting sustainability through rider-bike assemblages emerged thematically from the literature, examines collective action in bike commuters through their embodied, non-dialectic organization (Wilhoit & Kisselburgh, 2015).

Bicycle riders, their organizations and the social actions they take as members of their sporting communities can be considered as an assemblage. Wilhoit and Kisselburgh (2015) argue by redefining “collective action” to include the unintentional actions of organizational members:

The collective actions of a group of riders can take place without members’ conscious participation or formal organization (and) contradicts many of the assumed premises of theories about collective action such as the rational, economic actor (Chwe, 1999), group identification (Kelly, 1993) or deliberate acts (Carney, 1987) (p. 15).
Bicycle commuters as an organizational assemblage are not merely bike riders, but are comprised of the material objects and the spatial elements where they coincide that are laden with meaning resulting from their intersubjective experiences. The riders represent an organization of actors that take collective action to access roadway use although the actions are not discursive, nor do they identify as members of this organization. The study findings support this research in two ways. First, collective action that is non-discursive employs the use of embodied language. The mere presence of bike commuters accessing our public roadways creates, consciously or unconsciously, an awareness of their presence in both bike riders and automobile drivers. Wilhoit and Kisselburgh (2015) note “bike commuting is an embodied activity which involves a visible spatial presence on the road as well as the introduction of associated material artifacts in to the workplace” (p. 2). Thus, the rider-bike assemblage symbolically advocates for sharing road space that traditionally has been regarded for motor vehicular traffic. Secondly, the study supports the contention rider-bike assemblages produce an additive and emergent effect on society. Bicycle-commuters embedded in their network of other riders along with the surrounding material entities and the space they inhabit impart a form of collective action which emerges through their mere presence, and otherwise would not be present if they existed on their own as separate entities. Rider-bike assemblages need to be further assessed, documented and explored through this study to understand how they potentially impact and change adult learning.

In summary, objects and humans when they are examined as co-joined entities or assemblages, often offer valuable additive affects when we consider their socio-cultural relevance (Dant, 2004). Objects can become part of human unconscious perceptions or body schema and promote meaningful learning opportunities which would otherwise not exist if they were not part of us (Kerr, 2016; Olsen, 2010; DePreester & Tsakiris, 2009). Assembled objects and humans promote sustainability (Doughty & Murray, 2016; Wilheim & Kisselburgh, 2015), create access to mobility (Doughty & Murray, 2016; Jderu, 2015) and help adults develop autonomy and foster
a sense of freedom to explore outdoor spaces (Bengtsson, 2013; Rhodehamel, 2009; Finchman, 2006). Examining the rider-bike assemblage as a co-joined entity has been an opportunity to understand the role of objects and humans in shaping a local cycling society as well as its relationship to adult learning theory. In the next section I discuss the influences of Merleau-Ponty and Gendlin on Embodied Learning Theory as it relates to ANT.

**The Influences of Merleau-Ponty and Gendlin on Embodied Learning**

Embodied learning and its related areas have some important philosophical influences particularly in the work of philosopher Maurice Merleau-Ponty (1962) and psychologist Eugene Gendlin. Neither of them are learning theorists per se and come out of different disciplines, but here it’s important to consider their influences on embodied learning, particularly in the way that it can relate to Actor Network Theory (ANT).

The philosophy of Merleau-Ponty is unique in the sense that he adopts the use of an interrogative approach allowing the reader to construct his or her own meaning from his writing (Landes, 2013). He avoids the traditional approaches to philosophy in examining text through an objective or subjective means, but rather explores how the body is co-joined in human experiences. Objective approaches reduce such philosophical writing to neatly defined concepts. A subjective analysis allows the reader to project their own questions and responses to such philosophical writings (Landes, 2013). By examining the body as "the vehicle of being in the world, and for a living being, having a body means being unified with a definite milieu, merging with certain projects, and being perpetually engaged therein" (Merleau-Ponty, 2012, p. 84). Next, I explore Merleau-Ponty's writings on the importance of the body, space, sensory objects, humans and other living beings, and beauty and aesthetics.
Maurice Merleau-Ponty

Merleau-Ponty was a French philosopher (1908-1961) whose writing focused primarily on the role of human perception in the way we make important meaning through the engagement of our body in our experiences. He describes the relevancy of Gestalt psychology to his philosophy as "a whole that does not reduce itself to the sum of its parts," and further offers "it has a certain weight that doubtless fixes it not in an objective site and in a point of objective time, but in a region, in a domain, which it dominates, where it reigns, where it is everywhere present without one ever being able to say: it is here" (Merleau-Ponty, 1968, pp. 204-205). In other words, what people gain through their perceptions are the results of their experiences and cannot be understood to be similar for everyone. Merleau-Ponty’s (1964) use of the term chiasm offers insight in the way the human body, through its perceptive abilities, is able to make sense by opening up to an intermediate space that is felt not reflected. (p. 266) He illustrates chiasm in the way the human hand simultaneously senses through touching and can also itself sense being touched. Merleau-Ponty (1964) notes other aspects of our body exist ambiguously in chiasm as we are reversibly able to perceive our surroundings through the numerous tactile receptors in the body and embody meaning from our experiences. Merleau-Ponty’s (1968) concept of reversibility relates to the objects and people that surround us and becomes part of our experiences through our perceptions. Through our body there is a “carnal adherence of the sentient to the sensed and the sensed to the sentient (p. 142) Constantly in a state of flux within these subjective and objective states, the body then, is “geared into the world” (Merleau-Ponty, 1962, p. 250). Mazis, (2016) drawing on the depth of Merleau-Ponty’s (1964) notion of chiasm, offers the reversibility of the body into the world and the world into the flesh to be both “intimate” and a “gesture of embrace” (p. 26). The flesh and the world through silence move “back and forth across boundaries” (p. 26). Throughout his published works, Merleau-Ponty is critical of the works of
Descartes and Kant through which, he posits, the ego of classic intellectualism and the fictitious ontology of empiricism's examination of nature is revealed through a reductive, sum-of-the-mechanical-parts approach to knowledge and truth. He argues that laws and theories of science constitute knowledge of only an approximation of human perception and experience.

The data of perception and, more generally, the events which comprise the history of the world, cannot be deduced from a certain number of laws which supposedly make up the unchanging face of the universe. On the contrary, it is the scientific law that is an approximate expression of the physical event and which allows this event to retain its opacity (Merleau-Ponty, 2012, p. 35).

"(P)erceiving means having a body, which in turn means inhabiting the world" (Merleau-Ponty, 2012, p. x). "Instead of a world in which the distinction between identity and change is clearly defined, with each being attributed to a different principle, we have a world in which objects cannot be considered to be entirely self-identical, one in which it seems as though form and content are mixed, and the boundary between them are blurred" (Merleau-Ponty, 2012, p. 38-39). Merleau-Ponty (2012) argues the sense, the meaning of world that surrounds us is often brought to us in moments in which we disengage our consciousness and allow experiences in nature, for example, to flow into and out of us through the moments we merely experience them, much like ebb and flow of the tide. We become part of these experiences as they become part of us.

Merleau-Ponty's approach to the role of the body as it intersects with our basic range of activities, such as moving, language and our position in space and time, is one of a global awareness of our world through "body schema," a "manner of expressing that my body is in and toward the world" (Merleau-Ponty, 2012, p. 103). It is through the body and its unity with our surroundings, he insists that we perceive not only ourselves but also the world around us. We are
able to relate to others through bodily perceptions and experiences in the practical and social world, which he conceives as "body-mind complexes" Yakhelf, 2010, p. 416).

Merleau-Ponty offers being-in-the-world with others helps gather individuals together and engage them through transcendental intersubjectivity. In other words, it is humans that give meaning to others and the things in the world that surround us (Baldwin, in Merleau-Ponty, 2013). This phenomenon opens us to a Gestalt sense of knowing, not as knowledge reduced, objectified or compared to the experiences of others through bringing awareness outside of ourselves through our conscious thoughts and reflections, but unique knowledge through being-in-the-world through the intimate transcendence of the silent language of embodiment (Merleau-Ponty, 2012, p. 84). The language of communication is often silent, and may represent an important manner to engage and learn through our embodied awareness. It is a pre-reflective language open to expression and is an important way of making meaning in our lives.

Drawing from the work of Adams' analysis of expression in Merleau-Ponty's writing, our body is enmeshed in communication prior to and during such times that we are thinking and speaking (Adams, 2008). Our body then, is engaged in meaning before our conscious thoughts emerge to process and interpret language and are part of the creative nature of expression of meaning. An illustration of this phenomenon can be seen during a bicycle race as riders signal their intentions to others using their arms, legs, torso and head. Their bodily gestures represent a form of non-discursive language that may promote meaning to other racers. The use and meaning of this silent language in sport has not yet been completely described. As well, spoken words can provide additional embodied meaning to others through their tone, timbre and location. In this way, language delivers information to us more than merely through the words we speak, and it is our engagement with this plasticity of its nature that new meanings emerge from our language (Adams, 2018). As an example, during especially long and difficult hill climbs during a race, riders who are not as strong, or who are especially suffering physically, may use language as a
tool to control the pace during the ascent. Initiating a conversation among riders appears to be a way to control the tempo of the riding pace during the ascent by forcing them to shift their efforts in climbing to listening and interpreting meaning. The result may be to engage other riders and slow the pace just enough so that they stay attached to the group. As well, nonverbal language often helps riders predict another's intention such as through an attack that will benefit them by separating them from other riders. Riders often gain a sense of the signs of language and silence in others as their body gestures and is grasped by the perceptions of those familiar with their embodied language. For example, bike racers who are part of a peloton may notice a blank expression on the face of an exhausted rider who is suffering, or notice fatigue expressed through their body position on their bicycle. Racers may perceive this as an opportunity to separate themselves from a weaker rider. Teammates may view this as a moment where they may render assistance through encouragement or perhaps even physically push a weaker rider. Eugene Gendlin (1978) developed a theory to understand and value non-verbal embodied communication that leads to gaining knowledge through our body he called felt-sense. In the next section of this writing, I offer a brief review of the important aspects of his work that connects to the role of the body in learning and directly addresses my research problem.

Eugene Gendlin’s Psychology of Felt Sense

Eugene Gendlin was an American philosopher and psychologist who was a student of Carl Rogers during the 1950's. Rogers was best known for developing humanistic psychology in his approach to client-based therapy. Gendlin developed a six-step methodological approach to personal development that draws from unspoken, bodily awareness of issues that concerned his psychotherapy patients. His work later influenced Roger's later views of psychology (reference here). After realizing his idea of felt sense could be developed through skillful practice in his
patients, he published the work *Focusing* (1978) for its value to training and education (Gendlin & Hendricks-Gendlin, 2015). His philosophical and practical approach to learning through the body is important to this research, as it establishes a framework for the unique way the body acquires knowledge. It further illustrates how a practical approach can be applied to the philosophy of Merleau-Ponty. Although Merleau-Ponty's ideas on the phenomenology of perception establish a strong foundation for the important role our body plays in human experience, practical illustrations that may help illustrate how they can transfer to individuals’ daily lives are often lacking in his works. Merleau-Ponty’s (2012) existential approach using art and mathematics throughout his writing illustrate the important way the human body is engaged with the world, but may be difficult for some to understand. As a psychologist, Gendlin’s approach to the role of knowing through the body, is specifically designed as a learning tool to teach others the value of being attuned to how human perceptions can benefit them personally. Gendlin (1995) offers an illustration of the way the human body can be trusted to bring valuable information through intuition, but has been mostly disregarded in Western culture:

> If, for example, there are two things which also seem to be one in some intricate way, rather than try to lay out this intricate pattern in detail, thinking tends to stop right there. We consider the sense of such a thing as if it were a private trouble. It seems that something must be wrong with us because ‘it doesn't make sense.’ And yet we keep on having this stubborn sense which does not fit in with what is already articulated in our field. (Gendlin, 2004, p. 2)

Gendlin (1978) provides that an illustration of this scenario may be witnessed when walking alone at night through a dimly lit parking garage. Although we may look around and see no one, a feeling in our body provides a sense that tells us otherwise. Gendlin (1978) establishes a basis for his approach to learning and adult development through the organic manner in which learning is accessed through our body.
According to Gendlin’s (1996) approach to learning through felt sense, objects in our world reveal greater importance to us than do conceptual thoughts about the objects or examining the object through conscious logical deconstruction of its composition. Logic and conceptual knowledge is a wider and more distanced manner of knowing that separates our knowing outside of our experiences Gendlin terms "implicit intricacy" (Gendlin, 1996, p. 63). But, because we interact with objects within our world through the connectedness of our corporeality, we have a more intimate way of knowing both the object and our world (Gendlin, 1978). Our knowledge of that object, then, exists organically as it is part of our world. Objects help us penetrate the opaque nature of what we do not understand (Gendlin & Hendricks-Gendlin, 2015, p. 113). In sum, although Gendlin and Merleau-Ponty are not learning theorists, their influence on the role of the body, objects and space offer a valuable context for the theoretical framework for this study through two approaches, actor-network theory (ANT) and embodied learning. I discuss this in more detail in the next section.

Body Schema, Muscle Memory and Adult Education

In Merleau-Ponty's phenomenological approach to ontology, he argues human perception is the means of engaging in the world in which we live. It is through the realm of the body that we make contact with the world and rediscover opportunities which the world presents to us through the objects, space, time and language that surround us (Baldwin, 2013). An individual’s perceptions of the world are shared and is part of them, as they are part of the world and with others. By reducing individual perceptions by quantifying them to be the same for everyone through the realm of consciousness, there is a substitution of a universal construct through which the individual’s unique and malleable qualities are lost. The context and boundaries of our lived-world are not determined, although quite palpable through Eugene Gendlin's theory of felt sense
so we can more fully understand the distinction of logic and concept versus the felt sense of embodiment Merleau-Ponty articulates through his philosophy.

Gendlin's theory of felt-sense represents a practical approach to adult development by focusing on the value of our embodiment within our lived experiences. He asserts that it is in constructing our experiences in logic and conceptual thought through consciousness, that we lose the intimate connectedness of these experiences to our lives. The many levels of meaning I gain through the feeling of holding a leaded crystal wine glass in my hand, arrive to me through the realm of my corporeality and produce a myriad of perceptual levels in me that such an object cannot simply be understood by its reduction to quantitative properties. Gendlin (1978) notes quantifying such properties is a substitution of concepts in the depth we gain through our perceptions. As an example, I watch my wife prepare to decorate our Christmas tree each year by carefully unpacking each tree ornament with such ritualistic care, that it causes me pause and wonder why the process of tree-decoration takes so much time. Many of the tree-objects connect her to past emotional memories and to a sense of shared history with our children who constructed them when they were in elementary school. She does in part by reflecting with her memories, but to a greater degree, she connects to her embodied experiences through these objects. They take her back to the moments our children made them, and to the places where they first became part of our family tree. Other ornaments she carefully unpacks each year were given as gifts from her deceased parents. She reenacts a celebration of her Christian faith through these objects. The ritual is a meaningful, embodied, spiritual experience for her. I have a similar embodied experience with my bicycle, as it intersects with my body and connects me to the places and to the people with whom I ride. Gendlin recognizes the Gestalt value of our perceived experiences of objects. Objects affect us both individually and interpersonally as they are used within the contexts of the social settings in which we are embedded. Objects serve to beckon us towards additional context-dependent meaning and value in these settings. In addition, it may be
through the theoretical and methodological approaches of ANT that we are able to provide additional evidence to our understanding of the roles and meaning of its actors, living and non-human, through the rich contexts the fields where social settings unfold. In the next section of this chapter I review literature on the main foundational areas of embodied learning and ANT as it connects with my research. As embodied learning in adult education and lifelong learning establishes the importance of holistic and other ways of knowing, it also provides an important foundation for this research in integrating a manner in which the philosophy of Merleau-Ponty, the psychology of Gendlin and Actor-Network Theory may be used to further understand how the embodied use of tools used in leisure sports affect the process of learning.

**The Research Literature in Embodied Learning through Leisure Sports**

The role of the body in learning has been a subject of analysis in adult education beginning in the closing decades of the twentieth century (Merriam, et al., 2007). According to Merriam et al, (2007) much of the conceptual and empirical literature that emerged from this analysis explores the interconnectivity of the mind and the body in the learning process. Merriam et al (2007) posit the literature was largely sculpted by Feminist and Multicultural theorists, but also represents theoretical perspectives of adult educators and scholars in the health and medical fields. The purpose of these initial studies was, in part, to explore a more holistic view of learning that involves ways of knowing through the body's integrated mental, physical and emotional faculties (referred to as embodiment). The focus of these perspectives in adult education has been tied closely to experiential learning, but is unique, as it has been informed through phenomenology, and the philosophical works of the French philosopher Maurice Merleau-Ponty (Merriam, et al., 2007; Paparo, 2015; Küpers, 2013).
The term *embodiment* has been used throughout varied and diverse bodies of academic literature. Butcher (2012) credits Rohrer (2007) with identifying nine variations of the term that traces its original uses ranging from the philosophical writing of Immanuel Kant's *a priori* justification of rationality and Gestalt psychology to John Dewey's functional psychology and William James's speculative psychology (Butcher, 2012). As a result of its broad usage, the term *embodiment* has been a source of confusion as it had been used differently across academic literature producing a range of meanings. In an extensive search of multiple databases, Google Scholar, hand searches of journals related to adult education, multiple combinations of terms were employed in relating embodiment and sports to access peer-reviewed academic articles and studies accessed through Penn State University's Library System. The result of these searches found the term *embodied* or *embodiment* was often poorly defined or not defined at all throughout six of the 33 relevant sources the searches produced. Among these references, two articles used them in the title, in its themes of findings and throughout the text without defining its meaning. The poorly defined terms that relate to embodiment has led to confusion and multiple interpretations of their meanings. Freiler (2008) is credited with offering a definition for its use in adult education literature as it may be distinguished from somatic learning as "a more holistic view of constructing knowledge that engages the body as a site of learning, usually in connection with other ways of knowing (for example, spiritual, affective, symbolic, cultural, rational" (as cited in Tobin & Tisdell, 2015, p. 216). Furthermore, the authors mention the limited number of published research studies in embodied learning in adult education literature.

In a phenomenological analysis exploring participant's perceptions of adventure situated in various environmental settings, interview respondents described their relationship with the natural world to be a partnership, a “dance with nature” (Brymer & Gray, 2009, p. 3). Research findings from 15 athletes in Europe, Australia and U.S.A. indicate athletes regarded their relationships with nature not in anthropocentric, goal-oriented views, but as an "integrating
process and journey" (p. 3). With this in mind, the participants describe their "dance" as "dynamic, rhythmical, harmonious, fluid and responsive interplay between the extreme sport participant and nature" (p.3). Adventure athletes who participate in such extreme sports where their death may result from a "mismanaged mistake or accident" do so through sports such as base jumping with parachutes from solid structures such as Buildings, Antennae, Space and Earth (B.A.S.E.), extreme skiing, waterfall kayaking, big-wave surfing and free-climbing high mountains without ropes (p. 2). The list of sports that are included as extreme sports however, is expanding, but are somewhat ambiguously defined, according to Brymer and Gray (2009), to be a collection of activities which "seem to enable transformative experience by facilitating a deep connection with an aspect of ourselves that is brought to light only by being truly in the natural world and subject to outside forces" (p. 10). Brymer and Gray (2009) argue outdoor educators may improve students' learning experiences by integrating the importance of natural spaces in their teaching. The theme of rhythm experienced through embodied movement extended to scenarios that included a study of indoor circuit training athletes.

An ethnographic study of indoor circuit training classes held in fitness clubs in the Greater Manchester, UK area, Crossley (2004) examined "reflexive body techniques" by approaching the body both as an object for modification through fostering change through exercise and a subject of embodied intentionality. Drawing on Merleau-Ponty's phenomenology of his "sleep ritual," the author posits the presence a rhythmic sense in the manner in which participants "tune-in," in a non-cognitive manner, to the exercise classes and "tune out" of their "everyday attitude." (p. 53). The author cites certain habitual, reflexive practices that new participants must learn to "drop at the door" as they enter the facility and to automatically, and without question, begin "breaking the circle of habitus" (p. 53). Examples of these habits include the natural tendency to be publicly embarrassed or humiliated in obeying harshly delivered verbal commands of program instructors, or to cease physical activity when experiencing pain. Crossley
(2004) argues embodiment of new habitual practices may be learned and developed as newcomer participants’ experiences transcend their everyday habits and incorporate "new practices and the practical and pre-reflexive principles underlying them and does so simply by putting themselves in an unfamiliar situation and (after some time) catching on to the game" (p. 53). Participants’ "(s)ensuous rhythms of action and reaction involved participants' corporeal subjectivity as they were commanded to perform simultaneous cardiovascular exercise in a timed sequence with other members of the class by the instructor” (p. 53). The changing room was described as a place of symbolic meaning to participants as it became a site of transition to prepare them to shift modes of “connectedness in the world" (p. 41). By experiencing changes in their bodies through physical movements with other athletes, participants were in essence connected to one another. The significance of this study to this research can be seen through the way the athletes are able to communicate to one another through their embodied learning experiences in sport. Movement, rhythm and sensing nature are also ways to connect to valuable learning opportunities as was revealed in a study of cyclists’ experiences climbing Mt. Ventoux in France (Spinney, 2006).

By approaching learning through the meaning of space as it relates to embodied learning, Spinney (2006) explores cyclists' experiences in climbing Mount Ventoux, France. Mt. Ventoux is a frequent destination for professional road racers in the Tour de France. It has a reputation for causing pain and suffering among bike racers competing to reach its summit first. This stage is only one of the tour's 21 stages that totals an average of 2,200 miles. Described as being one of the "most dreaded climbs in the sport", Mt. Ventoux was the site of British cyclist Tom Simpson's death in 1967 and remains his "spiritual resting place” today. Spinney (2006) argues the "embodied rhythms and kinesthetic sensations of the movement of cycling are constitutive of the character and meanings of particular places" (p. 709). The physical places where we engage in immersive sports, then, is an important way we bring meaning to our experiences. Spinney’s (2006) use of the term kinesthetic sensations refers to the riders' non-cognitive, embodied
sensations of motion, pain, and connectivity to the mechanical aspects of the bicycle in the physical spaces where they unfold. But experiencing embodied meaning through pain, motion and connectivity to physical spaces are more than sensations, they help us make sense of the situations in which we experience them. Citing Game's (2001) work on embodied motility among horseback riders, Spinney (2006) posits "maintaining connection and rhythm doesn't work through the exercise of will power, but requires a mindfully embodied way of being" (p. 718).

The embodiment of connection to the rider is facilitated through the fusion of the bicycle and the rider Spinney (2006) terms the "hybrid subject object" (p.718). This phenomenon is similar to Merleau-Ponty's argument of artifacts as extensions of the body such as can be seen in a blind-man's walking cane. The objects are not merely objects in the environment, but a means through which the environment may be perceived. (Merleau-Ponty, 2012). The fusion of artifact and body results in a "symbiotic" relationship that transcends the environment also, uniting the rider, the bicycle and the space into which it is situated into a single entity (Brey, 2000, p. 1). Spinney (2006) also describes the bicycle as an extension of the whole person rather than simply a mechanical aid. The body in motion set in the unique physical spaces where they unfold in sport leads to "important insights" to adult learning, as the body is the "primary repository of sense organs", and may help us understand the "non-cognitive and pre-representational understanding of place" (p. 713). This phenomenon is explored in a study of athletes with asthma through participants’ embodiment of rhythm leading to an "indissoluble relationship” of rhythm partnered to their respiratory cycles (Allen-Collinson & Owton, 2014, p. 594).

The embodiment of breathing sounds produced in rhythmic sporting movements interconnects and assists with other human sensory perceptions. They assist in an athlete’s unconscious awareness of their body’s position in space (Allen-Collinson & Owton, 2014). The rhythmic cycles of inhalation and exhalation then, represent an important way athletes become unconsciously attuned to their movements and other corporeal rhythmic processes the body
produces where they engage in sport. Asthma represents a dysfunction of the body and interrupts the unconscious, taken-for-granted rhythmic processes of a healthy body that "disappears from our conscious mind" (p. 600). The body in action in illness, pain or dysfunction shifts away from this tacit, unobtrusive and rhythmic harmony of movement. The dysfunction becomes a conscious entity to the athlete and prevents them from experiencing the fluidity of harmonious movement. Mazis (2001) argues, in drawing on Leder, (1990) pain as a dysfunction "constricts our accustomed context of life" (p. 205). Athletes’ embodiment of pain and suffering can cause them to shift their focus away from experiencing rhythm and harmony in their sport and listen to their body in other ways. Hearing, for example, affords athletes a means through which they are able to embody their movement experienced in their sport. Allen-Collinson and Owton (2014) argue "acoustic knowing" generated by "deep listening" illustrates a way athletes are able to access "multiple layers of meaning" as they are brought to our awareness through "non-symbolic sonorous expressions" (p. 602). As research into the role of the body and adult learning is presently limited to several published studies, the opportunity to expand our understanding of how an athlete’s embodied sensations relate to the meaning and relevancy they impart in learning represents an important way we can expand this understanding in adult education theory and practice (Tobin & Tisdell, 2015). In the next section, I present the theme of fostering learning through multiple, combined modalities of the body situated in outdoor settings.

**Fostering Embodied Learning in Outdoor Spaces**

Several studies illustrate how athletes have experienced individual growth or personal transformation through their embodied learning in the environments in which they use tools in leisure sports. Rhythmic and prolonged strenuous physical exercise while simultaneously engaged in a network with others, was found to be a way of embodying learning through
"facilitating deep connections with an aspect of ourselves in the natural world" (Brymer & Gray, 2009, p. 10). The research produced in this review of literature that intersects with embodiment of rhythm and harmony in the sporting experiences of its participants may help guide adult educators to integrate its findings into outdoor programs. Brymer and Gray (2009) argue the embodiment of rhythm and harmony in sport produces reciprocal relationships with nature among athletes by "focusing on intimacy as opposed to risk" (p. 10). In addition, participant’s descriptions of their experiences avoided the use of words such as fighting or conquering with regard to facing physical challenges in the environment, but instead chose terms that reflected their "internal landscape and a transcendence to new forms of awareness" (p. 10). Recently, outdoor education programs have shifted their focus to include learner’s experiences “for enhancement of the well-being of individuals, communities and the environment” (p. 10). A second illustration of embodied learning in leisure sports focused on elements of danger in extreme sporting adventures (Brymer & Oades, 2008).

Athletes’ experiences in extreme sports may help them embody courage and humility and subsequently develop greater self confidence in other aspects of their lives (Brymer & Oades, 2009). Athletes in Brymer and Oades (2009) study of various kinds of extreme sports experienced epiphanies that were "permanent, instant and unexpected" as a result of potentially life-threatening risks they experienced in sport (p. 118). Learning to face life-threatening challenges fostered changes to the athletes’ personal identities revealed by their vivid descriptions of their near-death experiences. The epiphanies radically altered their relationships with nature and to their previous world views. Through their near-death experiences, extreme sports athletes discovered a context for self-learning facilitated through nature. They also experienced personal transformation by connecting deeply to a part of themselves they previously had not known existed. Brymer and Oades, (2006) in a previous study, found athletes of extreme sports experienced a sense of humility as a result of their experiences with danger. Several athletes
indicated that they developed spiritual transformations resulting in a more open attitude towards life after experiencing near-death episodes. Through their interactions in nature, they were able to realize how integrated they were as humans as part of nature. Athletes in this study also embodied feelings of courage as a result of their experiences (Brymer & Oades, 2006). Coping with fear, anxiety and risk produced an embodied awareness among athletes that resulted in "positive psychological experiences" (p. 124). This suggests that immersive sports situated in outdoor places can shape and facilitate changes to our individual identities. The outdoor settings where learning takes place also add value to an athlete’s perception of their sporting experiences.

Embodiment of courage and humility in learning may act as agents of change that promote a shift in the worldviews of adults through leisure sporting experiences. Although the term worldview has many definitions, briefly it is defined here as a person’s point of view or their ideas or beliefs on a global level (Underhill, 2009). The impact of courage and humility on adult development may be an important consideration in how we gain confidence and autonomy. The embodiment of danger and risk through near-death experiences in sport have also been found to promote autonomy and shift athletes’ worldviews (Simpson, Post & Tashman, 2014; Dutkiewicz, 2015; Brymer & Schweitzer, 2012).

Fear is a strong, embodied emotion that is often experienced by participants of extreme sports. Extreme sports such as B.A.S.E. jumping, extreme skiing, water fall kayaking, where death may result from "mismanaged mistakes," often finds athletes who engage in these sports experiencing other embodied sensations (Brymer & Schweitzer, 2012, p. 477). Fear is described as a "primitive emotion connected with the potential to urinate uncontrollably" (p. 481). The phenomenon of fear while engaging in risky adventure sports is also described as "constant and overwhelming," but athletes in these sports often made the conscious decision to continue with their risk-taking choices anyway, and indicate the feeling is "miserable" (pp. 480, 481). Brymer & Schweitzer (2012) describe the phenomenon of fear to produce a wide range of emotions among
athletes. At one extreme, athletes’ experience a loss of self and identity and at the other, an embodied feeling of unity with nature and the environment. Drawing on the work of Elias and Dunning (1986), Brymer & Sweitzer (2012) also describe fear as an emotion that adults normally avoid, but can also be identified and recognized, transcended, and even be invited, in order to transform an individual’s sense of personal growth, development and authenticity. One respondent described fear on a white-water rafting trip to "cement a sense of self" (p. 484). The findings of this study have implications for adult education as fear may be distinguished differently through extreme sports and its use in common language. Facing fear in extreme sports and learning to manage the emotion helps the management of fear in other aspects of life. Transcending our own limitations enables adults to manage fear in other aspects of their lives through learning to face fear in extreme sports. This phenomenon has broader implications for less risky outdoor activities in achieving a sense of fulfillment in life and individual transformative experiences in nature. Personal growth, transformation and embodiment in nature also emerged in a phenomenological study of adventure racing in the Everglades Challenge (Simpson, Post & Tashman, 2014).

Participants engaging in a 300-mile unsupported, eight-day expedition race using unpowered small boats and canoes from Tampa Bay to Key Largo Florida expressed that their experiences had transformed them (Simpson, Post & Tashman, 2014). Simpson, Post and Tashman (2014) found that athletes’ experiences in nature had personally transformed them. The moments they spent in nature led to an increase in athletes’ self-awareness and promoted deeper meaning in their lives. Among the athletes embodied experiences were suffering, pain, fatigue, and sleep deprivation. While these sensations are often viewed as negative experiences, Simpson et al (2014) found that they increased the value of the participant’s experiences as the level of their suffering increased.
The will to endure self-imposed pain and suffering in immersive sports is among the evidences athletes were pushing themselves physically and emotionally. “Suffering is a defining feature of the phenomenon of (extreme) sport because without the possibility of pain or damage the experience could not be constructed as challenging and this, in turn is an essential quality of the phenomenon (Willig, 2008, p.696). While largely a psychological phenomenon, the ability and will to endure and manage pain is an important aspect of competition. Olympic cyclist Scott Martin argues “to be a cyclist is to be a student of suffering (What Does It Mean to Suffer, 2017, para. 5). Along with physical fitness brought through intensive training and diet, the management of suffering is among the keys to an athlete’s success in competitive sports, but it is rarely addressed as part of their training regimen (Noakes, 2017). Athletes use various strategies to manage pain and mental strategies that change the athlete’s perception of pain have been found to triple their performance at the height of their perception of the limit of their ability (Marcora, 2008). Multiple time-trial champion Michael Hutchinson describes the management of pain in his book *Faster*.

That it ‘hurts’ is almost neither here nor there. You try to tolerate it, embrace it, put it in a box, luxuriate in it, turn your back and go to your happy place, deal with it in whatever other way you can. You have to go back again and again, and while you get better at it, it never gets easy (Hutchinson, 2014, p. 21).

British professional cyclist Marc McNally argues suffering “can be so cruel and so beautiful at the same time. The contrast between the pain and the euphoria it brings is what makes it seem more beautiful” (What Does It Mean to Suffer, 2017, para. 33). The phenomenon of self-imposed pain and suffering among athletes leads to new learning experiences among athletes situated in outdoor settings.

The outdoor settings in which the experiences of the participants took place were among key features that emerged from participant's interviews. Beauty of being in a "quite magical
place," and disconnecting from their normal busy lives through a sense of freedom (p. 117).
Athletes experienced personal transformation as a result of the pleasurable experiences in outdoor settings and being able to connect with nature in the wilderness. Simpson et al’s (2014) study demonstrates several ways in which alternative sport provides and invites a path to examine its context in adult education in which nature may transcends the physical, emotional and rational concept of self, which may lead to meaningful embodied learning experiences. A final empirical study examines how the unique natural settings of outdoor sports transcend an athlete’s body.

Building on the work of Spinney (2006) and Crossley (2004), Dutkiewicz (2014) examines an athlete’s body as a unique site of learning. Dutkiewicz (2014) describes rock climbers' haptic and kinesthetically-based habitus as "corporeal schema" (p. 26). The development of reflexive body techniques used in climbing shifted interview participants' worldviews and resulted in their developing of "new ways of acting and understanding" that were personally transformative to them (as cited in Dutkiewicz, p. 27). The term *haptic* is used to refer to the bodily sense of perception through manipulation of objects (Merriam-Webster. com, 2016). The author analyzed rock climbers’ sensory habits in climbing Pretzel Logic, a very difficult cliff face located in Rumney, New Hampshire. The interview respondents, whose ages ranged from 30 to 70 years, totaled 10: eight males and two females. Climbers did not mention the difficulty of the climb during their interviews, but instead spoke of their physical and personal experiences in climbing. Their habits, personal traits and strengths as defined by their previous experience in rock climbing were "mapped onto the rock's potentialities" (p. 36). In other words, climbers’ perceptions of Pretzel Logic were of a back and forth silent dialogue shifting in a temporal sense of present to being. The authors conclude with two main points. First, the way humans engage with the world is shaped by the objects in which they interact and is rooted in the habits of the "actor-object engagement" in nature (p. 26). Secondly, the climb can be regarded as a fluid experience that is shaped by the climbers' interactions and experiences rather than existing as a
fixed object. Embodied learning through the social interactions of other athletes in outdoor leisure sporting activities was also found to be important in the development of adults.

**Embodying Social Change through Immersive Sports**

Social interactions among athletes of immersive sports promotes changes to an individual's identity. They also promote changes to their social networks. Many of the changes are promoted through the silent, embodied movements and gestures among those with whom they engage in immersive sports.

Circuit training athletes shift their habitus, or embodied dispositions as a result of their social interactions with those with whom they train (Crossley, 2004). Habitus is described as predictable movements or bodily tendencies of people of similar backgrounds. They include the visible physical postural positions of the body and the abstract mental habits, perceptions, feelings and actions of an individual brought about by the way we are socialized (Bourdieu, 1977). Circuit training is a regime to physically condition the body through the use of multiple resistance machines. Crossley (2004) describes habitus among circuit training athletes to be a "lived-through structure-in-process through interactions of the body-subject" (p. 39). Athletes’ modification to their habitus promotes social cooperation in their practice. The athletes’ embodiment of the bodily gestures of others results in networking together to "interlock in a mutually reinforcing way" (p. 64). The result produced changes in the way the athletes made sense of their experiences through shared mutual cooperation of their bodily movement. This cooperation resulted in new friendships and new social cliques, which affected their perceived success in working together and thus the "doing of the class" (p. 65). The embodiment of rhythm and harmony in sport also changes the social practices of people in immersive sports (Brymer & Gray, 2009).
Athletes of immersive sports describe interacting with others in outdoor settings as a “dance with nature” (Brymer & Gray, 2009, p. 3) The social interactions that unfold in outdoor settings through group sport help them embody feelings of "the synergy and power of the dance relationship" (p. 9). Participating in group sports set in the natural world helps foster personal transformation that results in “intimate links with the natural world and open (us) to lasting positive life improvements” (p. 9). Athletes who form strong social bonds with others in their sport and share a mutual respect for nature exhibit increased levels of performance both in their sport and at their workplace (Shipway, Holloway and Jones, 2012).

Women distance runners who are unable to race or train due to injury develop strong social bonds with other injured runners (Shipway, Holloway and Jones, 2012). They experienced isolation as a result of being unable to run as an “insider” within their running community (p. 261). Coping with the disruption of physical inactivity produces strong emotional pain of separation with their social community. Sporting communities help us confirm our social and individual identities as well as fulfill our social needs (Shipway, Holloway and Jones, 2012). Athletes’ socially shared learning experiences also contribute to their development and are manifested through embodied learning experiences. (Simpson, Post, Tashman, 2014).

Adults who form strong social bonds within their sporting networks reveal an important element of the value of embodied, shared social experiences. The emotional feelings athletes share with others through sport allows them to affirm and validate their own experiences as well as form stronger bonds and friendships with others. Wilderness boaters in the previously described “Everglades Challenge” named their community "WaterTribe" and described themselves to be a "tightly knit community" where they mutually benefitted from every team member’s individual physical talents or navigation skills on their eight-day journey through the wilderness waterways of Florida (Simpson, Post, Tashman, 2014, p. 123). Athletes who help and encourage each other develop a sense of camaraderie within their social networks. Through their
embodied "ethos of working and learning together" their social alliances became "highly valued," or felt "like family" and resulted in a unity of "kindred spirits" (p. 123). Building social relationships with others as part of a sporting practice enhances athletes’ perception of the experience and also increased their level of enjoyment in these activities. Working together and building trust among athletes are aspects of camaraderie that may be manifested through the silence of our embodied emotions. The "ethos of togetherness" brought about through camaraderie emerged as a theme through a study of mud runners participating in a 21-kilometer, "military-style" obstacle course known as Tough Mudder (Weedon, 2015, p. 431).

The Tough Mudder obstacle known as "Everest" situated among the dozen other physically challenging hurdles along a 12-mile course located at Whistler Mountain in British Columbia Canada was the site of a study exploring camaraderie as an embodied social phenomenon (Weedon, 2015). The camaraderie experienced among the athletes resulted from participating in sports through a community of practice (Weedon, 2014, p. 444). Camaraderie can be described as “the commingling and the consequence of material-discursive enactments mobilized toward sociality” (p. 444). An athlete’s individual autonomy is displaced through their social collective social engagement within their sporting networks. This allows them to cooperate to collectively overcome athletic goals in immersive sports. Physical objects such as the Everest obstacle serve the athletes as "tools" to engage the body and as a physical place to materialize the athlete’s collective efforts in sport (p. 444). The interconnected, often unspoken manners through which athletes engage in sport reveal the importance of not only the use of embodied communication in their sporting networks, but also the material objects that are embedded within their networks. Mutual cooperation in sport promotes additional opportunities to develop knowledge of the value of embodied communication especially when a team member has a sensory limitation such as blindness (Hammer, 2015).
Tandem cyclists who engage in sport when one member has a sight limitation are able to draw on the physicality of their bodily experiences (Hammer, 2015). The embodiment of smells, sounds and sharing moments of discomfort experienced through mutually pushing their physical limitations, broadened the athletes’ understanding of “togetherness” (p. 517). Additionally, blind members of the tandem duos reported that their sensory differences were not eliminated, but enhanced through their embodied feelings of social unity with their partners. Drawing on the findings of Conquorgood (1985), Hammer (2015) offers a paradox of dialogical performance when one member has a physical limitation: "the deeply different can be deeply known without becoming any less different" (as cited, p. 517). Embodied learning through the social sporting body offers valuable insights for social dialogue and deeply meaningful human encounters through its "dependency and interdependency" (p. 517). Hammer’s (2015) research supports Merleau-Ponty’s argument of the body’s ability to function reversibly through the ability to simultaneously sense things and be sensed (Merleau-Ponty, 2012). As a co-joined entity, the tandem rider who is blind sees through her connection with the other rider and with the bike itself. Athletes also benefit from additional affective learning opportunities as part of their social sporting networks.

Dutkiewicz (2015), argues rock climbers are changed by the physicality of the objects they encounter when they climb as part of a social community. A rock climb "exists somewhere between brute, rock tangibility and social product" (p. 36). Dutkiewicz (2015) citing Lewis’ (2000) earlier work, argues the support of an athlete’s social network is important to the way climbers "embody agency," and "usurps the pre-eminence of cognitive apprehension as a key to acquiring knowledge" (as cited, p. 28). In other words, athletes gain confidence through their body’s physical ability to overcome obstacles in sport as well as through the co-construction of their experiences with those who are part of their sporting communities. The social influences of amateur bicycle racing may potentially provide similar examples of learning through sport which
may help in understanding how social networks serve adult growth and development. By acknowledging the importance of human emotions experienced in sport, the use of non-discursive language in communicating with other athletes, and through the value of objects that are part of their sporting communities, this knowledge may transfer to other ways adults learn by engaging socially with others.

Opportunities for Embodied Learning in Immersive Sports

This research presents several strengths and limitations that are related to learning through immersive sports such as bicycle road racing. I begin by discussing limitations in the reviewed research in adult education.

First, most of the studies address sociological and psychological aspects of embodied learning in immersive sports. There is a gap in adult education literature of refereed studies which specifically address embodied learning through immersive sports. The constructs of promoting social change, however, is a theme shared among sociological and adult education literature. Brookfield (2005) posits the importance of "unearthing, and then researching, the assumptions one is operating under, primarily by taking different perspectives on familiar, taken-for-granted beliefs and behaviors" (p. viii). Another limitation of the studies reviewed in this research is the lack of cultural, gender and social diversity among participants. Most studies in this literature review examined middle class, Caucasian, male participants. (Crossley, 2004; Hammer, 2015; Weedon, 2015). Accordingly, embodied learning, as it may be experienced by marginalized members of our society, was not revealed in most of the studies examined in this research. As a large emphasis of adult educational theory promotes social change by examining such inequities, explorations of embodied learning which focus on these marginalized perspectives may add to
our further understanding of their importance and relevancy in fostering equity in learning (Brookfield, 2005).

Secondly, many of the studies were situated in unique, outdoor settings. The findings may not lead to practical educational changes situated in formal settings. The majority of formal adult learning occurs within the walls of institutions geared specifically for educational purposes and employ traditional lecture-based or small-group discussion approaches to the facilitation of learning (Merriam, Caffarella & Baumgartner, 2007). Even non-formal adult learning largely takes place within buildings delivering education in controlled learning environments employing organized curricular frameworks assessed through highly bureaucratic and behavioristic formats. Merriam et al, (2007) argue community-based learning strategies, approach learning through organized programs which commonly "focus on social action and change for the betterment of some part of the community" (p. 32). Many studies examined in this research were situated in outdoor areas and may be best categorized as informal or even indigenous learning. Several of the studies examined specific social subcultures in immersive sports. Interestingly, Merriam et al, (2007) offer storytelling is often employed as a methodology to explore learning among indigenous peoples.

Third, as Freiler (2008) argues, literary gaps exist in adult education literature in which embodied learning has been examined through empirical study. As a result, several questions arise as a result of this research. First, what roles do the physical objects that we use in our experiences play in the development of our individual and social identities? Secondly, several studies specifically mention spiritual experiences among participants. No discussion was offered of its foundational relationship to existing theory within the studies. (Brymer &Gray, 2009; Brymer & Oades, 2009). Since spirituality has been a recent form of adult education analysis, this review of literature indicates immersive sports may be a fertile area to further explore spirituality among athletes. For example, athletes’ embodied feelings of pain through pushing their physical
limits, or through feelings of connecting to nature through their sport may also experience a form of spiritual connectivity to their Creator or to the planet through their body through their learning.

Lastly, many of the studies explore athletes’ embodied experiences with pain and suffering as positive constructs to their growth and development as adults. (Shipway et al, 2012; Simpson et al, 2013; Weedon, 2015). The terms pain and suffering are well defined within the context of healthcare and are presented through moral and ethical perspectives, but this research presents a different, perhaps confusing, alternate perspective of their meanings. (Ferrell, 2005). What remains unclear as a result of this research is the morality of using the terms pain and suffering that appear to be positive in sporting communities, while sharing the terms with people who suffer from obvious medical concerns and limitations of homeostasis. Pain as an embodied sensory and emotional experience in leisure sports seems to provide an integrative learning opportunity through which athletes may better understand their bodily abilities and limitations. The phenomenon of illness also represents a fertile area of learning that can teach us how athletes experience and deal with injury and sickness in their sporting lives. Next, I discuss several of the strengths that emerged from this review of empirical literature.

This research suggests that further empirical research exploring the role of embodied learning in immersive sports is warranted. First, the role natural environments play in helping athletes make meaning through the way they engage their body in sport is a theme throughout many of the studies examined in this research. Athletes describe outdoor natural spaces as authentic and meaningful to their experiences in sport. For example, outdoor sports are situated in nature, and interaction with the environment is understood to be part of athletes’ experiences. The sense of adventure that resulted from athletes’ experiences in nature resulted in feelings of freedom through escaping the demands of their daily routines (Simpson, et al., 2014). Taylor, (2009) posits the importance of authenticity through fostering trusting relationships in meaningful environments to promote transformative learning in adults. Spinney (2006) argues athletes make
meaning from their experiences through "interpreting space, place and landscape" and in their development of personal meaning through their sporting experiences (p. 729). Exploring other learning opportunities embedded in meaningful environmental settings, such as through bicycle racing, may help other adults develop embodied holistic experiences. The result may lead to personal transformative learning opportunities often not experienced, in my opinion, within the confines of a traditional classroom setting.

Secondly, the studies examined in this study reveal evidence of how an individual's identity may be positively changed as a result of experiencing shared, strong emotional, embodied sensations (Shipway et al, 2012; Simpson et al, 2014; Brymer & Schweitzer, 2012; Spinney, 2006). Their social identities may also be changed. Shipway et al (2012), drawing on Putnam's (1995) research on pain and suffering among triathletes, argues pain and suffering may lead to a form of "bonding social capital" as members of the community learn to withstand and enjoy suffering as a form of social capital "that members value as a marker of their collective identity" (as cited in Shipway et al, 2012, p. 268). Atkinson's (2008) study exploring long distance runners' "pain communities" found those athletes who have learned to enjoy the sensation of strong physical pain "appear to share a socially learned personality structure that considers instances of voluntary suffering amongst the participants as exciting and personally significant" (as cited in Shipway et al, 2012, p. 268). Furthermore, athletes reported a level of personal value and significance and meaning of their experiences in sport appears to increase as the intensity of suffering increases (Simpson et al, 2012; Willig, 2008). This research also indicates further exploration into embodied rhythms and bodily sensations through movement with the material objects and technologies they use in their sporting experiences may be warranted.

Lastly, Spinney (2006) argues athletes’ embodied sensations of rhythm through prolonged, repetitive movements of the body result in a change to our perceptions. He suggests
such repetitious and harmonic movements "effectively mediate a person" within an environmental landscape (as cited in Spinney, 2006, p. 712). By employing an embodied approach to interpretation of human sensations, technologies used as extensions of the body and the space in which they are aligned may uncover the "possibility for an unmediated relationship where meaning is created and identity is formed in the act of doing, away from prefigured representations of the social world" (p. 712). The boundaries of athletes' corporeal and social experiences in sporting environments have recently become blurred due to humans’ increasingly intimate relationships with material objects and technological innovations resulting in "less humanness" described as cyborg (Butryn & Masucci, 2009, p. 286). I would argue, drawing on Dant’s (2010) analysis of the driver-car, that the material objects we use in leisure sport have not only shaped us individually, but also sculpted our social actions and their forms as we interact with others. As an example, as a cyclist who uses public roadways, through my mere presence in these spaces, I am advocating to share the roadway with other motorists.

**Summary**

In this review of literature, Embodied Learning Theory and ANT have been discussed as ways to promote valuable learning opportunities brought through the body. ANT provides us with a theoretical perspective that is inclusive to the material artifacts that surround and influence learning by providing context and relevancy to the specific situations where meaning-making takes place. Both Embodied Learning Theory and ANT are to some extent rooted in the philosophies of Merleau-Ponty and Eugene Gendlin. Their philosophies establish the importance of human perception, brought through embodiment, to our experiences. It is the body that brings to us, a priori, the ability to experience our world “whose nature is independent of us” (Baldwin, 2013, p. 9). Both Embodied Learning Theory and ANT have been discussed as frameworks to
understand how bicycle racers learn through embodiment, co-joined with their bicycle as part of their social network of riders.

The research literature reviewed in this chapter supports the examination of cycling as an immersive sport and can add to the lens of adult education Embodied Learning Theory and offer valuable new insights that has expanded the current understanding of the role of the body in learning in several ways. First, the studies examined for this research reflect the importance of the authenticity of outdoor settings to embodied learning in sport. Learning that unfolds in natural spaces had been found to foster strong relationships through friendships and shared emotional experiences among athletes. Second, the strong embodied physical sensations often experienced by athletes during immersive sport have been found to have an effect on camaraderie and the continued formation of identity. Third, the research studies have also identified embodied elements of bodily rhythmic movements in sport to be a way that athletes develop important relationships with the natural world and each other.

The findings of the studies discussed in this chapter and the philosophical and theoretical literature discussed here provide an important backdrop to this study of bicycle racers’ embodied learning experiences. Hence, now we are ready to move to a consideration of the study’s methodology in Chapter Four.
CHAPTER FOUR: METHODOLOGY

Objects tell stories,
As they connect to our world
Changing who we are

The purpose of this study was to explore how adult bicycle racers using their bicycles, informally learn through engaging their bodies in the sport of bicycle racing, and to examine how their experiences helped shape their individual and social identities and created new social networks. As such, the specific research questions that guided this study as it relates to embodied learning in bicycle racers include:

1. What role did the bicycle play in the embodied learning experiences of participants?
2. How did the sport of amateur bicycle racing shape participants’ individual identities?
3. How did participants describe the ways the sport of cycling has helped them build their social networks?

The poem that begins this chapter relates the importance of objects to shaping our individual identities. Objects help us connect to our past experiences, and as a result, help define who we are. Bicycle racers’ learning experiences may be both individually constructed or the result of shared learning experiences which arise from interactions with other cyclists during group training rides or races. As current adult education literature in embodied learning has not thoroughly addressed how cyclists learn through their body in a social context, which is inclusive of the role of objects in learning such as the bicycle, my research seeks to bring understanding to this gap in knowledge. Given that qualitative research focuses on how people make meaning or understand a process (Creswell, 2013), which includes how people learn, this was a qualitative research study.

This chapter begins with an overview of the qualitative research paradigm, which includes a discussion of narrative inquiry and autoethnography as specific approaches that were
employed in this study. Next, I will offer a brief overview of my background as a bicycle racer as pertains to conducting this particular research study. I will then discuss the plan that was used for participant selection as well as the strategy I used to collect and analyze data in my study. Lastly, I discuss several strategies used to verify the dependability of my study.

**Qualitative Research Paradigm**

*Qualitative research* is by nature interpretive and assumes that reality is constructed socially (Merriam & Tisdell, 2016). Hence, this study employed an interpretive or constructivist design in order to expose the multiple views cyclists had as part of their racing experiences. As a method of inquiry, qualitative research “consists of a set of interpretive, material practices that make the world visible” (Creswell & Poth, 2018, p.7). This systematic inquiry helps bring understanding to the meaning people construct through their lived experiences. Merriam (2002) notes adults make meaning from their new experiences through their prior experiences which may lead to changes in their worldview. Qualitative investigative approaches probe deeper into the meaning and nature of people’s practices and may produce new ideas about things that we may not completely understand.

The design of qualitative research is “emergent and flexible” and can be tailored to the specific situations where people’s experiences unfold (Merriam, 2009, p. 14). This allowed me as the primary researcher in this study, to make subtle changes throughout the study as conditions changed. Because qualitative research most often happens in the specific settings where human interactions take place, it offered me, as the researcher, deeper knowledge of their cycling experiences. The result allowed me to build upon existing theoretical understanding of human experiences and learning. Among its philosophical underpinnings, qualitative research posits
there are multiple ways that people may construct their own meaning of reality (Ryan, Coughlan & Cronin, 2007).

Because individuals construct their own meanings of reality from their lived experiences, qualitative researchers attempt to make sense of how individuals make sense of their socially constructed experiences in order to communicate this understanding to others (Creswell, 2007). Qualitative research differs from a positivist epistemological perspective such as can be seen in quantitative research, which seeks understanding through “measureable phenomenon” (Merriam, 2002, p. 3). Data in qualitative research rather, does not result from random samples of numbers that are collected and reduced to make generalizations, but results from purposeful samples chosen by the researcher to seek the unique ways people make meaning through their experiences. As a result, the researcher serves as the primary instrument of data collection in qualitative research. Interviews, observations and documents are the primary means of data that are collected and are designed to seek understanding and “the meaning of a phenomenon from the perspectives of the participants” (Merriam, 2002, p. 12).

There are many types of qualitative research (Merriam & Tisdell, 2016). Some of these include basic interpretive studies (which typically gather data into themes), ethnography (which focuses on the study of culture), phenomenological studies (which focus on the essence of lived experience), grounded theory studies (which develop a theory from substantive data), narrative studies (which foregrounds individual stories), and autoethnography (which focuses on the cultural experiences of researchers). Because this study examined bicycle racers’ individual and socially constructed experiences in the unique contexts where they unfold, and because I have experience as a bicycle racer, I chose to employ two specific types of qualitative research: autoethnography and narrative inquiry. Employing a qualitative, autoethnographic research paradigm in my study allowed me to understand my own cycling experiences (as discussed in Chapter One), while by using a narrative inquiry approach, I was able to analyze the stories of
other cyclists that revealed, through a temporal aspect, their amateur bicycle racing experiences. These approaches are discussed in detail in the next section.

**Research Type – Narrative Inquiry and Autoethnography**

This research study was an autoethnographic narrative research study. Narrative inquiry focuses on the individual stories people tell about their experiences while autoethnography includes the stories the researcher tells about her or his own experience in light of the culture related to the topic (Merriam & Tisdell, 2016). The stories become the data in this type of research, and can be collected through interviews, artifacts, video and photographs among other forms. Here I discuss each of these types of research.

**Autoethnography**

Autoethnography is a methodological approach used to investigate researchers’ own culture relative to the topic of investigation (Chang, 2008). Educational researchers can explore their own experiences, through this methodological approach, as a way to gain a broader perspective of an existing theory or model (Vryan, 2006). The term autoethnography was first used by Karl Heider (1975) to describe the autoethnographic work of indigenous peoples, but since then it has developed as a qualitative research approach to examine the cultural and societal influences on the researcher from the perspective of the researcher (Boyd, 2008). The stories that researchers tell personally may be used to examine culture, but are not always autoethnographic (Jones, Adams & Ellis, 2013). Jones, Adams and Ellis (2013) argue autoethnography may be used in social analysis or in presentations of creative projects such as poetry, dance, art or
performance. They offer several important elements that distinguish autoethnography from personal biographical writing which include:

(1) commenting on/critiquing of culture and cultural practices.

(2) making contributions to existing research.

(3) embracing vulnerability with purpose, and

(4) creating a reciprocal relationship with audiences in order to compel a response.

(Jones, Adams & Ellis, 2013, p. 22)

Autoethnography may be approached through an evocative manner or through analytic means (Boyd, 2008). In evocative autoethnography, the researcher reveals his/her personal stories, while in analytic autoethnography, the researcher’s stories examine a sociological phenomenon from a broader perspective (Denshire & Lee, 2013). Ellis and Bochner (2000) argue evocative autoethnography “displays multiple layers of consciousness, connecting the personal to the cultural” (p. 739). However, both narrative inquiry and autoethnography make use of a variety of tools to collect data. Because my own bicycle road racing experiences have been rich, varied and have been shaped through several decades of time and tens of thousands of miles in training and competition, I employed an evocative approach to my autoethnography in this study as discussed in Chapter One. I began by exploring my early cycling experiences. I examined road racing and its culture by reviewing artifacts and documents I have collected throughout my racing experiences. Next, I offered stories of my cycling development by revealing the milestones, epiphanies, failures and turning points throughout my career. Finally, I discussed how the bicycle and racing within roadie culture has changed my social and individual identity as a person.

In autoethnography, as in other forms of qualitative research, the researcher’s data types include self-observation, document review and triangulation of sources. The researcher also draws from his/her own experiences in order to analyze, interpret and critique the stories offered
by others, when stories other than the researchers are included. The researcher recalls, observes and translates what is told to them in order to detect culturally significant stories (Chang, 2007).

Since my racing career began nearly 30 years ago, my personal cycling stories are numerous and diverse in form. In approaching my personal stories of bicycle racing, I began by recalling the stories that have personally impacted me with the greatest memories and meanings, and then organized them according to the criteria mentioned previously, and as portrayed in Chapter One. The analysis of my autoethography of my personal bicycle racing experiences was performed concurrently with the stories other cyclists shared through their interviews and then organized by emergent themes.

Like any form of research, autoethnography can be seen as problematic as it represents only one view of reality and for this reason is biased. Autoethnographic studies that focus only on the researcher’s experience can be seen as partial, given its singular perspective that reveals only the researcher’s vantage on a subject that they choose, and be critiqued as not presenting a full view of reality (Boyd, 2008). It does, however, reveal deep meaning through stories of personal and cultural lived experiences, as the researcher uses self-narrative to place him or herself within the social context (Boyd, 2008; Reed-Danahay, 1997). In short, autoethnography can be seen as insular, presenting only one view. However, by employing a research approach combining narrative inquiry (to be discussed below) and autoethnography in the exploration of the meaning-making of how I and other bicycle road racers construct our interpretations of reality through our embodied learning experiences in road racing, I was able to provide a rich and broad understanding of road racing’s unique subculture by focusing on participants’ stories as well as my own story, hence offering multiple perspectives relative to this subculture.
Narrative Research

Narrative research, as an analytic method originates with the experiences of individuals as told through their stories (Clandinin, 2016). Since this method of qualitative research is best suited for gaining understanding of the experiences of individuals or small groups that unfold over time through the stories they tell, I chose this approach for my research, which complements the autoethnographic component discussed above.

Narrative inquiry is a research tool that allows the gathering of first person accounts of cyclists’ stories that unfold through time. (Clandinin & Connelly, 2000). Gubrium and Holstein (2012) posit the socially situated places, or narrative realities, where people’s stories unfold are “as much a part of their reality as the texts themselves” (p. 2). Cycling is a sport that requires great amounts of time in training and competition and provides a rich backdrop for the stories that riders tell of their experiences. Narrative inquiry can be a means to understand their stories by "making meaning of experience through experiencing the experience" (Clandinin & Connelly, 2000, p. 80). Narrative inquiry, then, helps the researcher construct a “three-dimensional space” where the sport of bicycle racing unfolds "using a set of terms that pointed them backward and forward, inward and outward, and located them in a place” (p. 54). This use of space illustrates the importance of time as an element of narrative inquiry’s methodological approach to research. Stories can reveal additional depth and meaning to us when they focus on more than a simple description of events, but rather through the way the teller’s learning experiences from the past influence how they understand meaning in their future. (Clandinin & Connelly, 2000). Wells (2011) notes that the strength of narrative inquiry lies in the examination of stories that span longer periods of time, in stories that are withheld, and what is controlled and what is re-told by the story teller (as cited in Bosk, 2011).
Road racing is rife with opportunities for the researcher to explore the stories that emerge from racers’ experiences who have often spent decades shaping their skills and craft of racing their bicycles with other racers. The rich context of the outdoor places where these stories unfold also help shape their racing and training experiences. Whether winding through scenic roads along creeks or streams in woodland areas or in open windy, flat expanses of farmland, the character of these outdoor spaces shapes the riders’ experiences. Sabin (2011) discusses the importance of the researcher’s imagination in creating action that arises from narratives rather than “happenings” or image-like memories, and “can have a substantial impact on the identity development, beliefs and actions of the reader” (Sabin, 2011, p. 2). Furthermore, the reader may experience organismic involvement with narratives, a term Sabin employs similarly to the meaning of embodiment used throughout this study (p. 2). The outdoor natural landscapes where cycling stories are situated provided a rich context for the researcher to capture their depth using this methodological approach. Brymer and Gray (2009) found that athletes’ who experience sports situated in outdoor settings have experienced personally transformative changes to their identities as a result of their interactions with nature’s powerful forces. Narrative inquiry shares elements of its methodological approach with other forms of qualitative research.

Other forms of qualitative research examine peoples’ stories to understand their learning experiences (Reissman, 2007). They often make use of biographical, psychological or linguistic tools to approach their analysis (Merriam, 2009). Analysis is inductive, and like all qualitative research, the researcher is the primary instrument of data collection. Study samples are generally small and selected purposely by the researcher (Merriam, 2002). Biographical narratives are analyzed through examining the people in the stories. Psychological narratives focus on "cognitive, affective and motivational dimensions," and linguistic narratives examine the words used in story telling or the "speaker's intonation, pitch and pauses" (Merriam, 2002, p. 287). I used a biographical approach to narrative inquiry in my study so that the complex social, physical
and embodied elements of a bicycle racer’s learning experiences could be more clearly understood through the people that surround them.

One of the distinguishing aspects of narrative inquiry is how meaning in stories that are told by others are interpreted by the researcher. Telling someone else’s story often involves the development of a very intimate relationship with that person and the community where he/she is situated. Sharing cycling stories is often part of any group training ride. Hendry (2009) argues that all research is ultimately narrative in nature. He posits narrative inquiry helps us understand others’ experiences through their multiple perspectives and unique ways of knowing. Narrative inquiry’s philosophical approach is central to this study. The context and lived-experiences of bicycle racers’ stories intersect with the philosophies of Merleau-Ponty and Gendlin, which I discuss later in this chapter.

In basic and many other forms of qualitative research, negotiation of purpose is a step of the investigation completed at the beginning of the research. In narrative inquiry, this negotiation continually occurs throughout the investigation and affords greater clarity and increased significance to the stories that emerge (Clandinin & Connelly, 2000). The investigator also negotiates his/her own transitions in the stories that are told and explores ways to integrate themselves into the community where the study is situated (Clandinin & Connelly, 2000). Since this research was conducted within the subculture of a tightly-knit community of cyclists, the relationship I developed with its members through negotiating my position and presence was important in collecting the authentic and meaningful narratives that resulted from the participants I interviewed.
Combining Narrative Inquiry and Autoethnography

The use of multiple methodologies in my approach to my unique experiences in road racing and those of other individuals in my cycling community, allowed me to answer questions that could not be explored using a single research method and provides an opportunity to push the boundaries of traditional methodological research practices (Taber, 2010). In my research, I collected stories, which Clandinin and Connelly (2000) call field texts, from individual amateur bicycle racers about their “lived and told experiences” (Creswell & Poth, 2018, p. 68). The theoretical lenses I use in this research shaped how I interpreted meaning from the data collected and analyzed in this study. Additionally, many of my personal qualities and preferences may have influenced the way I interpreted meaning from the data I collected in this study. I made my personal influences visible to my readers, however, and monitored them throughout this study. Finally, I exposed any personal relationships I had with all of the participants in this study, and offered a description of my background as a bicycle racer. As will be discussed further below, participants were asked to bring documents such as a scrapbook or photographs to their interviews that represented important memories in their racing careers. The documents also included their own personal video recordings of their races, or physical artifacts such as their bicycle or other memorable objects. The visual documents and artifacts were used to elicit more detail in their stories by allowing them to re-visit their prior racing experiences (Harper, 2002), and allowed me to compare my experience with theirs and vice versa. Through the processes of data collection and analysis, which I will discuss in detail later in this chapter, I sought to gain a deeper understanding of how bicycle racers make meaning of their experiences in connection with their bicycle and other racers than any research method singularly would allow. Hence, the combination of approaches served the purposes of this study.
Researcher Background

I have explained my background related to this research project in Chapter One. This is the autoethnographic component of the study. As noted earlier, the purpose of autoethnography is to make the subjective experience of the researcher visible, and to analyze it from a cultural perspective. Further, given that the researcher’s role in all qualitative research as the human instrument who collects, interprets and analyzes data, how one deals with bias, or one’s subjectivity, needs to be addressed in all forms of qualitative research (Merriam & Tisdell, 2016). Autoethnography specifically makes what could be perceived as “bias” completely visible. Further, because the study was partly about the culture of bicycle racing, the fact that I’m an insider means that I have greater understanding as tacit knowledge of the culture, and may lessen the chance that aspects of the culture are misinterpreted. As a result, I believe my insider status was a strength of this study, and from another perspective mitigates bias and the danger of misinterpretation of the experience of others in the narrative portion of the study. In order to further deal with the issue of bias as the researcher in this study, I directly identified my beliefs and experiences in the autoethnographic account of the study. Further, I attempted to monitor and discuss my beliefs and perceptions that could be viewed as bias that arose during my study so that they can be identified and are visible to those who read my study, which can help the reader to determine the validity of the report (Merriam & Tisdell, 2016). This will be taken up further in the verifications section of this chapter.

Participant Selection and Informed Consent

Unlike quantitative research which typically makes use of a random sample, qualitative research makes use of a purposeful selection of participants according to particular criteria in
order to gather the most relevant data (Creswell, 2013). I used four criteria to guide the selection process of my study’s primary participants: a) participants represent adult learners, defined as being age 25 or older; b) they are USA Cycling licensed amateur racers with at least five years of racing experience, having raced a minimum of 50 races; c) they were or are currently members of a USA Cycling registered local bicycle racing team; and d) self-identify as being aware of the unique road-racing sub-culture that surrounds amateur road racing. Each of these criteria addresses specific components of my study and ensured that my pool of participants was both knowledgeable and experienced as amateur road racers. Employing a unique purposeful sampling approach for the selection of my study’s primary participants provided data that has resulted from the elements of both time and experience in bicycle road racing.

The age criterion used in this study assured that participants were adult learners. Typically, adults are recognized within the field of adult education as those whose age is 25 years or older, and learn differently than do children as they draw from more life experiences and are often self-guided in their process of learning (Knowles, Holton & Swanson, 2014). The second criterion limited the pool of participants to experienced, amateur road racers. USA Cycling is the largest national governing body for amateur bicycling racing in the United States. Through its affiliated member teams, it sponsors more than 3,000 amateur races each year (USA Cycling, 2017). The third criterion assured that participants belong to a network of other amateur racers, and are not simply casual bicycle riders who may not ride as part of a larger group of riders. The fourth criterion assured that participants belong to the unique sub-culture of road racers. Weiss (2010) offers the following attributes of roadie subculture:

Because road cycling is steeped in tradition (and occasionally garnished with attitude), every single aspect of road cycling – from clothing choice to equipment choice to hand signals to which way to pull off the front of a paceline – is governed largely by unwritten rules. And like many rules,
some of them have evolved out of necessity, practicality, or efficiency, while others may be practiced by tradition for tradition's sake. (pp. 1-2).

For these reasons, the participants in my study were knowledgeable of the widely accepted and practiced habits and traditions of this unique sub-culture.

I collected the stories of six amateur, licensed bicycle racers whose age was at least 25 years and who had raced at least five years and completed at least 50 mass-start races. The participants were selected to represent a diversity of gender, economic and cultural perspectives. This aspect of my study is supportive of the philosophy of adult education and provided me with a variety of participants and a broad range of stories of bicycle racing experiences. I offer a more detailed profile of my study’s participants in Chapters Five through Ten of this dissertation.

All participants agreed to be interviewed. Once they agreed, I invited them to be interviewed in a quiet location of their choice. If they did not offer a preference, I suggested meeting at one of the multiple student conference rooms at Pennsylvania College of Health Sciences where I am employed. Before conducting interviews, participants consented to my study. I provided each participant with a copy of my approved consent form to conduct my study from the Penn State Institutional Review Board (IRB). I then described my study procedures and offered interviewees an opportunity to ask questions about my study procedures. No questions were asked of my interviewees until all of their questions were answered to their satisfaction. I offered participants a copy of the consent form for their records. I kept a copy of their agreement locked securely in a filing cabinet in my office in the Science Neighborhood of the Cooper Building at PA College of Health Sciences. During the consent process, I informed each participant that my study was voluntary and that they may refuse to answer any questions that made them feel uncomfortable, or stop their participation in the study at any time. I maintained a database of the participant’s personal contact information, their pseudonym, and the study identification number I assign to them in a password-protected digital file folder in a secured,
virtual private network (VPN) located at PA College of Health Sciences. I am the only person able to access participants’ personal information. All study data will be kept securely in the same location accessible only to me for a period of one year after completing this dissertation.

**Data Collection**

There are three primary types of data collection in qualitative studies: interviews, observations and the analysis of documents and artifacts (including videos, diaries, objects, pictures and texts native to a research site or situation (Creswell, 2013). In this study, I used these three primary types of data collection methods to some extent to collect data to investigate the embodied learning experiences of amateur bicycle racers. My goal was to collect as much useful information as possible by using a variation of collection methods. For this study, the primary data came from the stories I shared of my own experiences in the autoethnographic portion, and the stories of other cyclists I interviewed in the narrative portion (Merriam & Tisdell, 2016). However, ancillary data drew from other important sources such as field notes based on observations, a personal research journal, cyclists’ pictures or personal videos of their races that they may discuss in interviews, and other documents (such as race reports) and artifacts (such as their bicycle). However, I was mostly interested in how participants discuss these documents or artifacts, and/or discuss my observations.

In the next several sections, I offer a discussion of how these processes were used throughout my study. Of note here, is that I used these forms of data collection at different points in the research process; however, for purposes of clarity, here I discuss them by type of data rather than necessarily in consecutive order of how I made use of these data collection methods.
In-Depth Interviews

Interviews are often a primary means of data collection in qualitative research (Creswell, 2013), and is the primary means of data collection in a narrative study. Hence, the primary type of data to be collected for this study resulted from two interviews conducted with each participant. Each of these interviews was recorded and later transcribed for analysis. The purpose of interviewing each participant twice was to provide them some time to consider their embodied racing experiences as well as their relationship with their bicycle. Jensen (2005) notes the importance of establishing mind-body links to learning have been traditionally ignored in formal education, so from a cultural perspective, many individuals may have some difficulty considering them. Because much of the phenomena that inform this study draws from links to learning through the body and may possibly have been unfamiliar to some people I interviewed in this study, the element of the time between interviews allowed them time to think about their experiences with learning through the body while they were actively engaged in riding their bikes. Additionally, I also asked participants during their first interview to bring documents or artifacts (such as pictures, race reports, symbols) to their second interview that offered insight into their body and their bicycle or their body and other racers. These interviews gathered data largely through open-ended, exploratory discussions which allowed respondents to tell me about their embodied learning experiences racing with their bicycles. Merriam and Tisdell (2016) refer to this as a semi-structured interview. The questions designed in this study were open-ended and conversational in nature, but included some specific questions about demographics and length of racing experience. If participants had difficulty understanding any of the open-ended questions, I employed more focused questions in order to gather the information. Further, I shared some of my own background as a bicycle racer prior to the interview, so participants understood some of my own experience and interest in the topic. I expect that interviews will be somewhat
Clandinin and Connelly (2000) argue the use of a conversational format for interviewing participants allows both the interviewer and their respondents to be more spontaneous in the interview and to develop a respectful relationship by sharing control of the interview process. The result is greater flexibility in gathering data and participants who are more willing to provide potentially rich information about their perceptions, emotions and feelings about their racing experiences. Using narrative inquiry to explore a phenomenon such as embodied learning provided me with the ability to collect data through participant interviews that were both descriptive and drew from years of racing experiences.

This strategy of employing semi-structured, open-ended and conversational interviews provided flexibility in the process of conducting the interview allowing for me to understand and collaborate with the participants about my research phenomenon as well as help establish a context of their learning (Candinin & Connelly, 2000).

As noted above, I conducted two interviews with each participant, because they may have needed time to think about their embodied experiences with and on their bicycles between interviews, or had questions from their first interview that may have provoked greater attention to learning through the body. In what follows, I describe what was asked at each interview. The questions used for each interview are also highlighted in Appendix A.

**Interview one.**

The first interview with each participant began with several questions designed to explore how they became interested in the sport of road racing. Next, I asked participants about their relationship with their bicycle, because I am interested in the bicycle and the rider as a human-object assemblage. I asked them to bring their bicycle to the first interview because it may represent a tangible means through which they may connect to the relationship they have
developed through their experiences riding and racing. I asked each participant to show me their bicycle, and how they picked this particular bicycle to find out in general how they relate to their bicycle; then I asked them questions about their sense of orientation through their body while racing their bicycle. The questions explored their knowledge of the proximity of other riders around them and of the affective qualities they may have felt through rhythm, harmony or fluidity of bodily movements riding their bicycles. I also explored if and how they access knowledge through their body, and of their negative experiences or limitations while riding, such as pain, discomfort, lack of rhythm, or how they may have known if they have reached moments in which they have exceeded their physical or mental abilities while riding their bicycles. I also asked them questions about changes they perceived in their body schema, their sense of body and self and how those changes were impacted by their training and racing routines through their experiences with speed, strength, rhythm, pain and suffering. At the end of the first interview, I scheduled a second interview and gave each participant at least two weeks to consider some of the questions I had asked during their first interview. I then asked them to bring pictures or documents that depicts or provides insight into how their body and bicycle or their body and other riders act together as an assemblage.

**Between interview one and two.**

I asked each participant to consider some of the questions I have asked during their first interview. I suggested that they first think about the questions and then consider them when they were riding with others during a training ride when they were engaged in movements through their bodies with their bicycle. This provided participants with the opportunity to reflect and think about questions asked during the first interview while they were riding their bikes and provided
an opportunity for them to discuss them further with others with whom they knew and rode regularly.

**Interview two.**

The second interview focused on revisiting the questions I had asked participants during the first interview by reviewing any documents, artifacts and pictures brought by participants. I used the pictures and/or documents or artifacts as an elicitation device. Harper (2002) notes photo elicitation is “based on the simple idea of inserting a photograph into a research interview” (p. 13). The effect is that by using more of the brain’s capacity to connect through its multiple processing regions “photos evoke deeper elements of human consciousness than do words…” (Harper, 2002, p. 13). Harper (2002) adds photographs and images employed as a research tool are able to portray a range of effects from those used in a scientific fashion to depict collections of objects and things to “intimate dimensions” of social groups, the human body, or even strong emotions from those who view them (Harper, 2002, p. 13). But the artifacts were also used to elicit racers’ embodied experiences in cycling. “It is my body which gives significance not only to the natural world, but also to cultural objects like words.” (Merleau-Ponty, 1962, p. 235).

Because I was interested in a broad range of experiences cyclists may have through objects they use with their bodies, the documents and photographs were used during the second interview to retrieve and revisit the memories and experiences that they have had that connect them to their bodies, bicycles and to the people with whom they shared these memories.
Observations and Field Notes

Observations are an additional source of data collection in qualitative research (Creswell, 2013), and data from observations are typically documented through field notes, that allow the researcher to keep track of objective data. Field notes also can capture the reflective observations of the researcher, through their commentaries, about how they interpret, speculate or add insight to a phenomenon that is occurring and represents a form of preliminary data analysis (Merriam & Tisdell, 2016). In my study, I collected field notes by describing the activity and interactions of racers and spectators at the race courses that I visited, as well as collecting information about their location, time and dates that the events took place. While the observations themselves were an ancillary form of data, in that I am primarily interested in how participants made meaning of their racing relationship with their bicycles, the observations provided context. The field notes were also used to record information that was both relevant to my study and represented a way to be actively immersed in the process of continual data analysis throughout my study.

I also kept a personal research journal throughout my study. The journal allowed me to keep written record of my thoughts and reflections during my study and to record any other items of interest that emerged during my field observations, during the interview process, or during the process of data analysis. This aspect of study allowed me to be immersed in the process of data collection and analysis throughout my study.

Documents and Artifacts

Documents and artifacts represent other types of data that the researcher collects in a qualitative study employing narrative inquiry (Merriam & Tisdell, 2016). Documents may include, but are not limited to race results published online or in newspapers, blogs, wikis or
personal journals that participants may keep as record of riding performances or training notes. Artifacts may include pictures, objects or videos that highlight personal meaning to them. Documents and artifacts help provide additional context to the problem being studied and provide support to the analysis of participant interviews; documents are “ready-made sources of data easily accessible to the imaginative and resourceful investigator” (Merriam & Tisdell, 2016, p.162); the personal documents examined in a study can include “scrapbooks and photo albums, calendars, auto-biographies, and travel logs” (p. 166). As it pertains to my study employing a narrative inquiry approach to how bicycle racers embody learning through racing, the use of such personal and visual documents allowed me to gather evidence of the culture of cycling that was important to the individual racer. Such artifacts, or physical objects that have important meaning to cyclists also represented a means to gather evidence in my study. These documents were used as an ancillary source of data in the study, and as an elicitation devise in the interview itself, where I asked participants questions about such photos and documents that they were invited to bring to their interviews. More specifically, in my study, participants were asked if they had any documents such as news articles of their race winnings, scrapbooks, photographs or artifacts such as objects that relate to the sport of cycling or memorabilia that added additional meaning and relevancy to them personally and thus add depth to the interview.

Potential pictures/videos as an elicitation device method.

Documents and artifacts such as pictures and objects can be used as an elicitation device in an interview. Videos are also a source of information that can be used to elicit the experiences of bicycle racers. Small cameras mounted on racers’ handlebars can record video by individual cyclists or spectators who are watching bicycle races may capture moments of the race on handheld devices. In speaking of the use of video in general in qualitative research, Jewitt (2012) notes
that the use of video can capture “rich, non-verbal cues” of a phenomenon of interest (p. 3). Existing videos may be the personal property of interview participants, be archived as part of a broadcast media data base (Chouliaraki, 2006), or exist as online YouTube files (Adami, 2010). There are several benefits to the use of video elicitation as a document analysis method that may potentially benefit this study. Roth (2009) notes videos help interviewees recall and reflect and promotes discussion. In some instances, this process also helps the researcher with validation through cross-checking (Jewitt, 2012). Tochon (2009) posits the use of existing video can help reconstruct thinking that has occurred in the past, to guide actions in the future. Furthermore, Jewitt (2012) notes video is a “multimodal fine-grained record” that can be used to “rigorously and systematically” examine the gaze, expression, body language and/or gesture of a person (p.6). In short, the use of existing video represents “a tool to re-orientate the power of the researcher’s gaze and give voice to research subjects/participants” (Jewitt, 2012, p. 3). Since I am interested in the non-verbal body cues that racers use in communication with other riders in the sport of bicycle racing, not as somatic movements, but through their felt meaning to participants, existing videos were used in this study as a means to elicit interview participants’ experiences with how they experienced meaning through them. Only one participant in this study brought recorded video data from several of his races. During our interview, he accessed several of his racing finishes on YouTube (a web-based site to upload video) and shared them with me. As we watched the videos together, he offered commentary about his racing strategies that resulted from the information he gathered from the other racers who were around him near the finish line of the races. The videos were a valuable resource to help me understand his strategy of watching the body language of the other racers in order to guide his own race finishing strategies.
Artifacts as an elicitation device.

The sport of bicycle road racing makes use of many material objects that may serve as physical documents that can be analyzed as part of the study setting (Merriam, 2009). Examples of such artifacts may include the bicycle, racing prize winnings such as medals or trophies, clothing, race memorabilia or other relevant materials that adds to our understanding of the culture of cycling. Artifacts serve as important links to the context of cyclist’s narratives by establishing strong connections through their symbolic meaning and relevancy (Gubrium & Holstein, 2009). Objects such as an old racing number may serve as a connection to their memories of a past racing story. My research included asking participants about these artifacts that surround the culture of cycling; hence these objects acted as an elicitation device in the interview. Since narrative inquiry focuses on stories that have a beginning, a middle, and an end, the use of personal interviewee-provided documents and artifacts in my study afforded participants the opportunity to revisit their racing memories. (Clandinin & Connelly, 2002).

Participants in this study brought objects such as race numbers, helmets, clothing items and bicycle parts that had been part of their crashes, non-cash race prizes, as well as team clothing items to the interview. These items were used to rekindle their memories of their races in order to capture more detail from the stories of participants during their interviews.

Data Analysis

In qualitative research studies, typically data analysis and data collection happen simultaneously, in that researchers do not wait until they have collected all the data before they begin the study (Merriam & Tisdell, 2016). In this sense, for example, after conducting each
interview I made analytical notes at the end of the interview about what stood out for me, about
the participant’s relationship with the object of the bicycle as well as what he or she said about
networks and embodied learning. Such analytical notes helped guide the further collection and
analysis of data.

**Process of Analysis**

The model of narrative inquiry I used to examine data in my study addressed the
importance of not only elements of time, place and personal meanings in the stories that are told
by cyclists I interviewed (Clandinin & Connelly, 2000), but also examined the role of objects
such as the bicycle and how racers potentially may have embodied a “symbiotic relationship”
with their bicycles (Dant, 2004, p. 75), or socially with others actors within their racing networks.
The data were analyzed specifically around these issues as well as with an eye for what changed
racers’ sense of self through an intersubjective sense of self.

The data collected for this study consisted of 12 transcribed interviews (two for each of
the six study participants), field notes from race observations, participants’ documents (written
and/or visual) and any artifacts they brought to their interview. The data constituted various forms
of what Clandinin and Connelly (2000) term field texts because they were the result of stories that
were told by cyclists whom I have interviewed. After I conducted the first interview, I examined
the entire text of the story told to me by the interviewee in order to make adjustments, if
necessary, to the interview guide to assure that they elicit responses related to the purpose of my
study. By analyzing the entire text of the first-person accounts participants offered in their
interview, I was able to explore, through narrative inquiry, how cycling had brought change to
their individual or social identities. I also considered any evidence of how racing their bicycle, or
people they have met through cycling may have created turning points in their lives, particularly
in light of the theoretical framework. Narrative inquiry as a process of analysis allowed me, as the researcher, to re-tell cyclists’ stories by re-describing them through the lens of how I understand how their actions and experiences have shaped them (Mishler, 1995).

The data that I collected throughout my study, through its various forms, helped provide me with multiple evidences to support my research problem exploring the embodied learning experiences of bicycle racers. Participant interviews were digitally recorded and later transcribed for coding purposes, and data were actually coded and analyzed through an open coding analytical procedure. Such a procedure attempts to create names and categories for “each discrete incident, ideal or event” that emerges around a concept, and then group the words, phrases or paragraphs that share similarities (Merriam, 2002, p. 148-9). The codes took the form of margin notes in interview transcripts, color-coded words or phrases and by constructing outlines to connect common elements of participant’s stories. The emergent categories were refined and modified throughout the study by the use of digital folders that contained all evidence for each theme. A visual representation of each digital folder’s content was constructed on a poster board and allowed me to inductively cluster research data and manipulate the development of my tentative categories into more solid, final categories through deductive analysis of evidence. I repeated this coding process to develop themes in my final field texts.

Further analysis of data collected in my study was done by examining all the interview participants’ transcribed texts that “have a common storied form” (Reissman, 2008, p. 11). This includes the story participants tell, the chronology of the events and experiences that have unfolded over their time, and include important moments, “turning points or epiphanies” in their racing experiences (Creswell & Poth, 2018, p. 198). Data included not only the participant interviews, but also my field notes and personal research journal, and participant-provided documents and artifacts that were discussed in the interview. I utilized a holistic, biographical text-based form of narrative analysis to explore the internal organization of participant’s stories
so that I could re-tell their bicycle racing stories through my own interpretations (Gubrium & Holstein, 2009). I used a process called *restorying* to re-write their stories from what emerged from all of the participants’ data, and in essence co-created the stories with participants by co-constructing them collaboratively (Creswell & Poth, 2018). I wrote the initial draft of their story and sent it to them for member checking, which gave the participants the opportunity to make any modifications. The final stories were shaped chronologically so that the stories of their bicycle racing experiences were inclusive of moments of their past, present and future (Clandinin & Connelly, 2000). This was how the analysis was done in general, but there are some specific elements that I discuss below that are specific to this study.

**Autoethnography and Data Analysis**

As I too, am a member of this tightly-knit, socially-based athletic community, I employed an autoethnographic method of analysis for my own story that is also part of this study. The use of autoethnography allowed me to negotiate my own experiences in racing and include them in the analysis of the stories other cyclists have told me of their experiences in bicycle racing. Additionally, I analyzed my own autoethnography as part of my approach to the narrative ethnographic process, and in light of the theoretical framework of the study. This method of analysis helped me to develop research texts which weave my own cycling racing experiences with the stories of other cyclists’ racing experiences. Daitue and Lightfoot (2011) note these stories can include possible life turning-points or epiphanies. They were also used to gather evidence of change in cyclists’ habit-bodies which often develop gradually and are often unnoticed. The autoethnography portion of the study allowed me, as the primary researcher, the possibility of contributing deeper knowledge and meaning to how objects such as their bicycle has shaped racers’ individual and group learning experiences (Gubrium & Holstein, 2009;
Lieblich, Tuval-Mashiach, & Zilber, 1998), as well as how my own story is affected by the stories I heard from participants.

**Biographical Narrative Analysis and the Theoretical Framework**

In order to develop emergent ideas from the data collected through participant interviews, field observations, documents and artifacts, I employed a holistic, biographical approach to narrative analysis (Beale, 2013), but I did so in light of the theoretical framework of the study, which is primarily grounded in Actor-Network Theory, and to some extent in embodied learning in adult education as it draws on both Merleau-Ponty’s philosophy of the body and Gendlin’s theory of felt sense. These theoretical frameworks affected how I analyzed my personal cycling story and the stories of this study’s participants. ANT focuses on the relationship of actors with a network of objects and others. Hence, I focused on discussions that surrounded participants’ relationships with their bicycles and the network of other people and objects within the space.

Merleau-Ponty’s (1962) philosophy of human perception brings attention to the way individuals learn uniquely from their own experiences by engaging their body in their experiences. Merleau-Ponty (1962) argues human experiences cannot be reduced to be one that is similar for everyone. Learning, according to Merleau-Ponty (2012), is the result of how the human body intersects with the world through our language, movement and position in time and space. Drawing on the work, in part, of Merleau-Ponty, Gendlin (1978) developed a unique, practical approach to teaching others to develop awareness in their lives by learning to engage their body in their experiences. Both Merleau-Ponty and Gendlin emphasize the importance of the role of our individual, unique human perceptions in shaping the meaning we make from our learning experiences. While Embodied Learning Theory in adult education establishes the importance of the body in learning, existing literature has largely explored the role of learning in
individuals, and has not thoroughly examined the social context of embodied learning or the role of objects in learning. In this study, I examined my autoethnography, the stories told to me by the participants I interviewed, as well as all other sources of data such as documents, artifacts, field notes and observations using a holistic, biographic approach to narrative inquiry that I explain in further detail below.

Employing a biographical approach as a thematic form of narrative analysis, I analyzed the stories I told and the stories told by others I interviewed that place events and moments in their experiences in time into a “patterned life story” (Reissman, 2005, p. 2). Using this approach in my study’s analysis allowed me to understand how cyclists’ experiences have been shaped over time by identifying key events in their stories. This holistic form of biographical analysis allowed me to examine the entire text of a person’s story that has been shaped over time (Gubrium & Holstein, 2009). Using this narrative technique, I included the entire story of my respondents’ racing experiences into my analysis. The use of a holistic, biographic analysis to narrative inquiry brings value to how a bicycle racer’s story has evolved through time and allowed me to understand how “parts within it (may be) interpreted in relation to the other parts of the story” (Beale, 2013, p. 694). Gubrium and Holstein (2009) argue the reality of the lived experiences of people are largely shaped by their social interactions and may be explored through the internal organization of the stories they tell. Since my research focuses, in part, on the social aspects of embodied learning in adult education, the use of a holistic-content reading approach allows me to consider how the social experiences of the cyclists shape both their individual and social identities as they have evolved through time.
Verification Strategies

Qualitative research, like any form of research attempts to produce results that are believable and trustworthy. Since qualitative research is based on the ways individual people interpret meaning in their lives through their unique experiences, its standards to instill rigor, or credibility and trustworthiness, in a study differ from those in quantitative research (Merriam & Tisdell, 2016). There are several ways the researcher may approach the study’s validity and reliability in order to produce trustworthy, believable results. The validation of qualitative research requires the researcher to employ a number of strategies (Creswell & Poth, 2018). Employing triangulation through the use of “multiple methods, multiple sources of data, multiple investigators or multiple theories in order to confirm emergent findings” is among the recommended ways to assure that a qualitative study will be rigorous and credible (Merriam & Tisdell, 2016, p. 244). Other methods that assure credibility through a research study are adequate engagement in collecting data, peer review, researcher reflexivity, and member checking; a technique used to confirm that the stories I wrote about participants’ cycling experiences met with their approval. Next, I discuss the ways that I assured my study was credible and trustworthy through triangulation.

Throughout my study, I employed three triangulation strategies to ensure credibility, trustworthiness and to confirm the findings that resulted from my research. First, the data collected throughout my study was gathered through multiple data collection methods. These methods included conducting interviews, making field observations, and analyzing artifacts as well as written or visual documents. The data collected through these sources offered multiple ways to approach the analysis of my own racing experiences as well as the first-person accounts of the stories told by the bicycle racers I interviewed. Secondly, since the forms of data that were collected in this study occurred at different times during a number of different bicycle road races
at different event locations throughout my study, triangulation of these multiple data sources assured that the data was reliable. Additionally, I collaborated with interview participants through member-checking, or sharing the data I have collected and my interpretation of their experiences through the stories I re-tell of their bicycle racing experiences.

Member checking in the study took the following form. As noted above, after I constructed participants’ narratives based on the data, I sent the completed story draft to each one and asked for feedback about the accuracy of my understanding of the stories they told during their interviews. A few minor changes were made as a result of the member-checking process. For example, the model and manufacturer of a participant’s first bicycle was changed to reflect the correct version. I also corrected a reference to one participant who I mentioned won a number of national racing championships when in reality he won only one, but mentioned that he placed among the top three racers in at least ten national championships.

Lastly, my study utilized multiple theories as a form of triangulation, called theoretical triangulation, to confirm that the phenomenon of learning through racing a bicycle captures the unique ways bicycle racers make meaning through their experiences. In my study, I approached the analysis of the data using ANT and Embodied Learning Theory that is informed by the philosophies of Merleau-Ponty and Gendlin to “see how each fare in relation to the data” (Seale, 1999, p. 54). As discussed in greater detail in Chapter Two and Chapter Three, the use of multiple theoretical frameworks as a method of triangulation increases the dependability of the findings and offers further insights.

Researchers also assure credibility in a study through the process of peer review. In terms of peer review, I shared my study data with several other members of my doctoral program cohort and doctoral committee in order to increase the dependability of the findings. This strategy served to assure that “the findings are plausible based on the data” (Merriam & Tisdell, 2016, p. 250).
Lastly, *researcher reflexivity* may be described as the way the researcher affects the research process and vice versa (Probst & Berenson, 2014). As a cyclist who has raced my bicycle for several decades, my “assumptions, experiences, world-view and theoretical orientation” may have influenced and been a source of bias in my study (Merriam & Tisdell, 2016, p. 249).

**Summary**

In sum, this was a complicated study because it attempted to explore a level of perception that is often not fully conscious to the racer as he or she is riding. This study explored aspects of pre-reflective or unconscious learning in adults gained through the familiarity of the human body and objects such as the bicycle as a “collaboration of human and object forms” (Callon, 1991, p. 135). As Dant (2004) notes, such assemblages between objects and humans are “temporary and habitual” but by acting together, they exhibit actions and capacities that neither could reveal on their own (p. 62). In addition, this study explored cyclists’ personal and social embodied learning as it takes place within the sport of amateur road racing. As such, the study makes use of data collection and analysis methods that allowed me to gather in-depth data on a small number of participants to make these intricacies more visible. The verification strategies ensured that the study was credible, and hopefully will eventually make an important contribution to existing literature in leisure sports, ANT and to adult education and practice as it intersects with Embodied Learning Theory.
PART TWO

STORIES FROM THE ROAD

Part Two of this dissertation, containing Chapters 5-10, describes the findings of this study. Each chapter in this section presents the narratives of each of the participants and reflections from my experiences riding and racing my bicycle. The stories are built around the themes that emerged from the data analysis in this study.

The intent of this study was to investigate how adults learn through engaging with their bicycles set within the social context of the sport of amateur road racing in order to understand how this learning shaped their individual and social identities. In order to expose variations of bike riding and racing stories, it was important to collect stories from a diversity of experienced racers. For these reasons, study participants are of different genders, economic backgrounds, educational levels and ages. Each of the resulting narratives reveals a very personal connection to participant’s embodied learning experiences with their bicycles. The stories expose the experiences which help them foster connections to other aspects of their lives through embodying both physical and emotional experiences while racing and training on their bicycles.

While each of the participants was asked the same questions in their interviews, the interview process was more conversational so that their stories flowed naturally to expose their personal cycling experiences. This process also allowed participants agency in sculpting the direction of the interview to help in shaping their personal cycling stories. Most participants began with how their beginning cycling experiences led to their choice of becoming amateur racers. A key feature of the interview process was the artifacts the participants were asked to bring which helped them to reconnect with specific moments of their racing experiences. The purpose of asking them to do so was an elicitation device to garner new and interesting data.
The theme of change is often employed among researchers utilizing narrative inquiry as a form to understand learning and can be seen in the works of Geertz and Bateson (Clandinin & Connelly, 2000). In discussing Geerz and Bateson, Clandinin and Connelly (2000) posit change as instrumental to our lives:

There is no doubt that for Bateson as for Geertz change is one of the characteristics of lives. For Bateson, though, change and continuity are brought together by human agency. Improvisation and adaptation to change allow the past to be connected and to have continuity with the future. (Clandinin & Connelly, 2000, p. 7)

**Navigation of Narrative Chapters**

The chapters that follow illustrate how the participants in this study, and my personal experiences, have been shaped through the changes amateur road racers experience individually and collectively that have resulted from the constant need to adapt and improvise through the embodied learning experiences gained racing a bicycle.

I begin by offering a definition of terms used throughout this section of my research. The terms appear in italicized font throughout the narratives contained in this part of the research and are mostly slang in origin, often used by cyclists to describe a phenomenon unique to road racing or its culture. Other terms may not be cycling specific, but may help clarify the meaning of their uses by participants interviewed for this research. The terms offered in the next section differ from the more scholarly terms found at the end of Chapter One.

The narrative chapters are organized by the participants interviewed for this research. Most of the chapters begin with a traditional Haiku poem written by participants who were willing to share them with me. The poems are a creative, first-person expression summarizing the
individual participant’s cycling experiences. A second element of the narrative chapters is the researcher’s reflections and analyses embedded within and at the end of each of the narratives. The purpose of this second element is to include the researcher’s autoethnography into the data analysis. These sections begin with italicized, bold style font and identify them as researcher reflection and analysis or reflective summary and analysis accordingly. Third, since each participant was interviewed twice, the narratives begin with data collected during the first interview, and the second interview with a heading labeling it as such. Finally, a summary of each participant’s interview may be found at the close of their narrative chapter.

**Definition of Terms**

*Break* – When the peloton of riders in a race setting separates often because several riders want to increase their chances of winning by accelerating very quickly.

*Crit* – A slang term for a criterium race: a short, square or rectangular shaped road cycling race course averaging one mile in length.

*Domestique* – A professional racer whose position on a cycling team is to assist another rider on his team in winning a race.

*Drafting* – Gaining an advantage of speed or energy savings by riding very close to the wheel of the rider directly ahead.

*Fixed-gear* – A bicycle without a freewheel. As long as the bicycle is moving, the pedals and crank arms move as well.

*Freewheel* – The collection of gears on the rear wheel of a bicycle with more than three gear combinations. The entire freewheel spins when the cyclist stops pedaling.

*Keirin Racing* – A form of track racing that originated in Japan in 1948 developed for gambling purposes. The race begins with riders drafting behind a speed controlled motorcycle that
slowly paces the pack of racers to just over 30 miles per hour when it leaves the track, allowing the racers to finish by sprinting for the final lap.

**Pucker factor** – Military slang for a high adrenaline moment that causes tightening of the buttocks caused by extreme fear (Safire, 1998).

**Riding the Bus** – a term often used synonymously with *Sitting In.*

**Sitting In** – A bike racer who drafts other riders throughout all or part of a race in order to minimize their physical effort.

**Swag** – An acronym for stuff we all get – items handed out to racers that are free of charge.

**Telegraphing** – Communicating to other riders or racers of your next intention, without speaking, through body movements that are obvious to other cyclists.

**The River Ride** – The nickname for a 30–40-mile bicycle ride that meanders through variable terrain through central and southern Lancaster County, PA. The ride is well known among local racers and has regular riders that use the ride for training purposes on a daily, week-day basis. The photograph (Figure 2-1) at the end of Chapter Twelve is a climb along the route we call The Barn Hill; one of the many hill climbs along the 35-mile route.

**Wheelsucker** – A cyclist who intentionally does not take his turn at the front of a pack of riders in the wind. Instead they ride protected from the wind behind other cyclists during a race in order to save energy for the finish of the race.
CHAPTER FIVE: PAUL

Paul is a 56-year old Caucasian wholesale manager for an energy supply company. Having ridden a bicycle all of his life, Paul’s enthusiasm for competitive cycling began in his late teens through the encouragement of the owner of a pretzel bakery for whom he was working at the time in the early 80’s. Paul played many sports throughout his younger life and thought riding with other cyclists in a local bike club would not be a great physical challenge.

I played all the sports you know: basketball, football – all the sports. But I didn’t think it would be a big deal – OK, I’m going to go out there and ride my bike and I probably wouldn’t have any problem keeping up, and I got smoked. I got dropped off of the back (of the group of riders) and I couldn’t keep up with these guys. I was just challenged to a limit I had not been challenged before. It got me to continue to work on improving and riding more so that I could keep up with the other riders. I remember Tim (owner of the pretzel bakery) took me up to the velodrome to watch the races, and I was totally blown away. I saw the guys flying at high speed in a pack, and I was just like – this was the coolest thing ever! Just seeing the racers at the speeds they were going and the way they handled their bikes and all the sounds – I just wanted to be part of that, and I knew that I would have to work and train to condition myself to get to that level. When I became involved as a racer, I totally enjoyed myself, being part of a whole field of riders – it was awesome.

Researcher reflection and analysis: Paul’s story of his first ride made me reflect upon my first mass-start bicycle race. I had spent, what I had considered to be, plenty of time on my own riding hard on a daily basis, eating more nutritious foods and becoming more physically fit before my first race. But I, too, got shelled (dropped off the back of the pack) in the first half-mile of the
Race officials routinely pull riders from the field when they decide a racer is not able to rejoin the peloton. This prevents them from rejoining the pack after being lapped by the peloton. Slower riders also pose a danger to other racers because of their differences in racing speeds. The realization that you are not up to par with other racers through this type of failure is a truly humilitating experience after investing so much time and energy conditioning your body. But riding in a pack at racing speeds is really how I learned to race my bicycle.

**Developing Skills**

Paul spent a few years developing his bicycling skills and devoted time daily training on his own in order to attain the necessary fitness and confidence to ride with a group of other riders. I would ride every day and just push myself as hard as I could. I lived in the western part of the county, so I was riding all of those hills. I would ride as hard as I could up those hills and until I was confident enough to go to the training races in The Greenfield Industrial Park. It was in the ‘80’s, you know, the early ‘80’s when the training races were still there.

**Researcher reflection and analysis:** Local racers would use the informal drop-in weekly race at the industrial park as practice to test their fitness level and to prepare for formally-organized sanctioned races throughout their planned racing season. It was as close to a real race experience that cyclists could have. The field of riders often reached 75 to 80 racers. The riders and their bicycles come together, part of a moving social network, primarily to test their racing skills. However, other connections develop as a result of racing together. The riders arrange to meet for other training rides, they share conversation about their equipment and some riders make long-lasting friendships as a result of their shared love of their bicycles. Bruno Latour (2005) argues objects play a role in societal dynamics. The bicycle in this case, as a non-living
object certainly brings influence and relevancy and connectivity among riders that otherwise may not have occurred in its absence.

Several well-known local racers began to take an interest in Paul’s developing racing abilities and encouraged him through making him feel part of the local cycling community. He (Phil) was really interested in riding with me. He would take me out and I would just ride. He got to know me and I just felt, you know, honored that people would come up and talk to me and made me feel part of the cycling community. It motivated me to work harder and do better.

Assemblage

Considering what Paul had described about the people he met that made him feel connected to his cycling community, I asked Paul if he had any experiences when he was racing or training when he felt his bike was connected to him – as if he didn’t notice his bike when he was riding.

I know when we used to do the race up at the Letterkenny Army Depot – it was a 15-mile course and we would do six laps, so it was 90 miles. You just got to a point in the race...you know, you’re just peddling, and you don’t even know you’re peddling anymore. It’s a three and a half-hour race so you just constantly...you know, you’re going at 85-90 percent of your maximum capability and you just...you get to a point where you’re not even thinking that you’re peddling – you’re just going to keep up. And guys are riding away from you. You get to a point that it’s so hard you just want to quit.

Researcher reflection and analysis: Paul’s experience during his Letterkenny race is in stark contrast to his experiences riding alone when he embodies his bicycle as being part of him.
During this race, his body is working so hard just to keep up with the other racers, his embodiment of being part of his bike shifts to struggling with his bike. He seems to notice it in a way that is in contrast to when his bike felt part of him.

I wanted to know more about some of the feelings Paul experienced during moments when he struggled on his bike, so I asked Paul to describe moments when he felt pain or discomfort.

I remember we were at a race in Allentown, and there was a huge field. I just remember it was a humongous field and the race was so hard. And I just kept trying to…I could barely stay in the middle of the field. But I just fought and hung on as hard as I could and I just…you know, you just pushed yourself just to hang on that wheel in front of you. You know I finished the race, but I was at the very back of the field. And I was just…toasted. But I wasn’t going to quit – I just said (to myself) I wasn’t going to quit. I’m just going to push and push and push and just hang on as hard as I can. I don’t know if I was just under the weather that day, or if it was a top-notch field with lots of strong guys – it was just one of those races where it was completely strung out the whole time and all you could do was just hang on to the wheel in front of you. You just fought and fought and just told yourself – don’t you dare give up – you just gotta hang on here.

I asked Paul what his feelings would be if he decided to quit during a race like he described.

There have been times when I didn’t finish a race, and you’re just totally demoralized. You feel like a failure, like a coward or whatever, and that you just gave up. And that’s the worst feeling. You know, you’re so much better if you fight through it and hang on in a race – even if you don’t place – just to finish that
race. And you know you accomplished that at least: you can walk away with your head up. The other way you just kind of feel...you feel terrible.

Paul also described how he knew his body was tired when riding his bicycle.

I know if I slept well or didn’t sleep well, or if I had done another activity before riding my bike. You can tell if you are fatigued, usually if you are going up a hill and you don’t even think about it, but then you go up and you really got to labor and push yourself, huffing and puffing where on another day you may go up without even thinking.

**Researcher reflection and analysis:** There have been times when I begin a ride when I can tell how the ride will go within the first half-mile whether it will be a good day or if I feel like my bicycle and I are in a wrestling match. Sometimes it may be several hard days on the bike, or a race that went really hard and you can feel the lactate in your leg muscles. Often you don’t experience the feeling until you begin to ride. Cyclists often use the metaphor pedaling in squares to refer to the disharmonious feeling it brings. Paul’s bicycle helps him shape how he is feeling when he begins a ride. He has learned, in a symbiotic sense, through meaning he gains about his present physical condition by his connection to his bicycle, whether he is “in tune” or not (Gray, 2009, p. 7).

**Fighting the Bicycle**

Paul described several other factors such as wind, precipitation and the outside temperature that caused him to feel like he was fighting with his bike.

I try to plan my rides so that I’m heading out into the wind. It’s kind of like a reward at the other end (returning with a tail wind). So, if the wind is more than
18 to 20 miles per hour, I’m going to be headed out in the direction the wind is coming from.

I asked him about other external factors that would prevent him from riding his bike. You know if it is a really strong wind or if it’s below 30 degrees and there’s dampness on the road, I’m not really (going to ride) because I start thinking of safety factors. I just know it’s going to be ice, and I don’t want to take that risk anymore.

Researcher reflection and analysis: In the height of my racing career, I would train in all weather conditions for fear that I would lose the fitness that I had worked so hard for. Guys would ride in conditions that were less than optimal. I recall my gears freezing once during a ride and I had to ride 15 miles home in one gear combination – up hills, down hills with no ability to control my cadence.

I wanted to know more about how Paul’s positive experiences riding his bicycle. It just feels like, you know, it’s part of you. You don’t even think…you don’t even think…you don’t even move that bike. You just kind of…go with it. And I don’t know how you know you direct it – it’s just like it’s part of you. When you go through turns or you maneuver around somebody, or…it’s almost like it steers on its own…it’s almost like it’s part of you.

Paul seemed to be struggling for words to describe the phenomenon he experienced with his bike, but my question led him to offer some of his feelings about the aesthetic qualities of cycling.

Someone on a bike to me is very …It’s a beautiful thing…just seeing someone pedal smoothly, and just the look of the bike…that…just to see that, you know, anytime I see a bike, man, I’m like…it gets my attention right away. Just somebody that has those skills and is pedaling smoothly, and handling the bike
right. And guys who are in a tight formation – that’s a beautiful thing to see! It’s the visual aspects of the colors – I’m just drawn to that. And seeing guys staying together tight as they go through a turn. I really appreciate that – it’s the coolest thing ever. I see four or five guys turning together, or just riding tied together riding in that echelon formation.

When I asked Paul more about how this strikes him as important to him, he offered that it represented the culmination of many factors that took time to develop.

It’s just, you know, the skills that they develop over time, and that conditioning, and the training. I think over time, to be efficient, to operate the bike efficiently, you just learned that over time. I think the repetition of doing it, and you know, I know when I ride the rollers (indoor cycling skill development tool), that it conditions you to ride very smooth – to pedal smooth, and to ride in a straight line. You know when you see a true cyclist going down the road compared to someone who picks up his bike once a month, you know by the way he is peddling and seeing that smooth peddling style. And his position on the bike…you know, not sitting upright, (but) kind of in that little bit of a bent back and bent elbows and that position…it’s just awesome to see that.

**Paul’s Second Interview**

Paul’s second interview took place at his home several weeks after our first meeting.

After we discussed several thoughts that resulted from the first interview, I noticed he brought one of his old racing jerseys from his old racing team, so I asked him to tell me about his racing experiences with his club.
Racing for Cosmic

Paul began to race as a member of the Cosmic Cycling Club. During our second meeting, Paul brought his Cosmic Cycling Club cycling jersey. Noticing several obvious tears in his jersey that had been repaired, I asked him what his motivation was for participating in what seemed to be a very dangerous and risky sport. Holding his club jersey in his hands, he told me about a race that took place back in the late ‘80’s in front of the White House in Washington, D.C. called the National Capital Open:

The field of riders was huge. The race course is elliptically shaped with no straight sections. We actually had a rolling start because there was so many crashes on that course. There are guys literally right up against your shoulders, we were so tight in there. And you just had to have confidence in your abilities. You know you had to make that decision that you were going to take that risk and keep going, or pull out and withdraw. But you know, I certainly never wanted to quit anything, so I just stayed in there and just worked through those conditions. But it was kind of nerve-wracking knowing that any second you could be on the ground. In order to have good results, you just have to take those risks. But in the end, it’s exhilarating to be part of that group. To be riding at those speeds and just being part of that group and to want to push yourself beyond the danger of crashing, just being able to finish a race, you’re just elated—even if you don’t place, you know it’s an accomplishment.
Racing and Identity Change

Paul also shared several of his past racing numbers with me during our second interview. Boldly emblazoned with huge black numbers and pin holes where he had attached them to the back of his cycling jersey, the wrinkled, rectangular, paper objects revealed their age. I could tell the racing numbers were meaningful to Paul as he handed them to me carefully while making eye contact with me. Paul’s numbers took him back to each of the races through his recollection of vivid memories he shared with me. I asked Paul if racing a bicycle has changed him. He paused for a moment to think, but agreed that it had.

It has made me physically stronger and emotionally stronger, because you know, because you got to want to finish a race because you know you’re going to suffer for almost the entire race until the end. You know sometimes in races my legs felt like they were full of blood and I felt like I couldn’t move them. You knew people were riding away from you, but you didn’t have the condition or the body or the lung development to handle those demands. But to know that you finished is such a reward. You have to develop your body by riding and conditioning yourself and just taking care of your body to get to that level.

Researcher reflection and analysis: Paul’s response made me think about the benefits of how riding and racing my bike brought changes to other aspects of my life outside of cycling. I lost 35 pounds without dieting. Like Paul, I was eating healthy foods and no longer suffered from Seasonal Affective Disorder. I felt calmer and less stressed at work and home.

Paul described several emotional benefits he noticed as a result of his cycling. His work schedule is very demanding. Often, he works throughout weekends and is often on call to truck drivers who have delivery problems, accidents or need other assistance – sometimes in the middle of the night.
A lot of times when I am riding my bike I think about work and what I need to work on – different ideas about work, and you know, it’s not cycling related, but it kind of helps me expand my mind and to be able to think more creatively. I have come up with some good ideas when I’m out there on my bike and I actually came back and initiated different things at work that have been really effective, and I don’t know if it has anything to do with riding or just being out by myself or away from all the other distractions where you are able to be deeply reflective with all the things I have going on. I don’t know, it just helps with the blood flow in your mind I guess and to think a little bit differently.

Researcher reflection and analysis: Reflecting on my own experiences, cycling has been somewhat of a spiritual experience for me at times. The rhythmic movements of peddling for rides that last several hours while simultaneously being in the midst of the beauty of the natural surroundings seems to bring to idle the stresses of daily routine.

I wanted to know more about what other connections Paul made with his experiences with his bike, so I asked him to describe some of what he felt when he rode.

You get into a rhythm when you’re riding. You know, you don’ even know your legs are even moving, they just seem to be systematically just doing it on their own – without even thinking. And some days you’re not even peddling you know. When you feel that way, you start to push your resistance up a little harder and then move into a bigger gear and go a little harder until the point where you know you feel comfortable and where you can maintain that level and keep the same cadence, and your peddling and it’s like it’s going on automatically, so you don’t even think about it, you’re just doing it.

Researcher reflection and analysis: Paul seems to experience a connection to his bicycle brought through his body during his rides when he is alone. He explains that as a result
of the rhythmic, affective movements he experiences on his bicycle, he thinks differently.

In solitude and apart from the distractions of his daily routine, he mentioned that he experiences an unawareness of the movements of his legs brought through the rhythm of his pedal revolutions. Paul has learned that riding his bike gives him access to making changes in his work and personal life through his embodiment of the rhythmic movements he experiences.

The Social Aspects of Racing

Paul’s description of riding in a pack prompted me to shift the conversation to some of the social aspects of racing. I began by asking him about some of the differences he notices riding in a group versus riding by himself.

I don’t know if it’s a guy thing, but you got some camaraderie riding in a group. But there is also some competition. You know, you want to kind of push each other, to be at a level you don’t get when you are by yourself. When you ride with other riders we have our little sprint intervals. You know we say we are not going to do it, but it’s just in your blood. You want to just go and compete with each other, and it’s just very rewarding having that little competition.

I asked Paul if riders verbally tell each other that they are going to go hard during a ride. No, no, no…It’s actually...we tell each other the opposite. But we just get to that level where one of us is feeling a little better than the other, and they end up pushing the rest of you. It’s actually a way of conditioning yourself better when you ride with other guys. You’re getting a better workout than if you ride by yourself.
Next, I asked Paul how he could tell if another rider was feeling good without asking him verbally.

They may actually say something different, like give you a call (to ride) and tell you they aren’t feeling so well, but you can tell the way they just accelerate around you or up a hill, or moving in front of you. You can definitely tell, and then based on how you are feeling – if you are struggling to keep up – you can certainly tell when someone is stronger than you.

**Researcher reflection and analysis:** Bicycle racers, in moments like Paul had just explained, often are able to embody a social connection to other riders and as a result, gain a competitive advantage compared to non-experienced racers. They have learned to recognize the body movements and gestures of other riders and can often predict what their next strategic racing move might be during a race. Someone once told me this was called telegraphing. The ability to read the body language of other racers can often make a difference in successfully separating the field of riders by joining a small break or being left behind. It is a very important strategy that racers learn through experience. In moments such as Paul had described when he recognizes when someone may be feeling strong or have a bad day. But many other factors in bicycle road racing may be collectively experienced by other riders and change what happens in the next moment. A dropped chain, someone reaching for their water bottle, heavy breathing which suggests to others that somebody is approaching their physical limits.

**Negotiating the Cycling Culture**

I was curious about Paul’s interpretation of the culture he experienced surrounding road racers. In an effort to understand more about Paul’s perceptions about roadies, I asked him what kinds of things he had noticed as he first began to cycle competitively.
People look down their nose at you, you know. You were intruding on their territory – I don’t know if they felt threatened by me or whether they didn’t want a guy out there riding along with them with no skills – that would jeopardize their ability to be safe on the bike. They don’t know me, you certainly have to prove yourself. It’s not like just because you show up people are going to be able to open their arms and welcome you in there.

**Researcher reflection and analysis:** I had personally noticed that cycling culture was pretty nasty when I first began racing. Some cyclists call it race face. Road racers are frequently known for their open unfriendliness to newer riders, so I asked Paul what it meant to prove yourself.

Just being able to …. you don’t want to be sitting in the back, you want to be able to do your part and be in the front and pull and break the wind for other riders. You want to be safe and handle your bike right, and you want to be able to keep up. You know to earn someone’s respect you gotta be there at the end when everybody else is finishing, and you have to do your share of participating with those efforts up front.

I asked Paul if he was able to notice riders that were not roadies by the way they dressed or rode their bikes.

Oh, yeah! Just their position on their bike. The way they sit upright. If they are not riding in a straight line or their peddling style. If they’re choppy in their peddling style, you can just…you know…you can certainly identify that pretty quickly. They may be wearing sneakers or…you know…cut-offs, or a baggy jersey. Those are signs.

His comment on clothing made us both laugh out loud together.

Paul then described more attire that resulted in mutual laughter.
You know, big Bell helmet – you know, the old white style Bell helmet with the reflective tape down the middle?

**Researcher reflection and analysis:** To which I added, folks with propellers on their helmets. We both shared loud laughter. The unique dress roadies wear may be some of the reason they quickly alienate other bicycle riders with whom they share the road. Racers recognize other racers not only through the way they ride their bikes as Paul previously described, but through symbolism in their almost universally adopted code of dress.

**Racing and Time Commitments**

Paul decided to stop racing his bicycle when it became difficult for him to balance the time commitment needed to be a successful racer with his family responsibilities.

…you know I’ve done some Masters’ races after I was 40 years old, but I just didn’t want to miss that time with my family. I know for me to be racing it would involve my weekends and every day – just didn’t want to miss them growing up and seeing them off to college. I want to keep my wife as the main part of my life.

It became clear, however, that Paul was still very passionate about the sport of cycling. He continues to ride regularly, but without the expectation of producing racing results as part of an organized team.

In the final part of the interview, I asked Paul two final questions. First, I asked him what made him so passionate about cycling.

I just love the feeling of being fit. The feeling of freedom – being on the bike, and being able to go where you want to go is exhilarating. To see what you want to see and go every direction you want and just to see Lancaster County and
being with friends, and riding with friends. You can ask my wife – she knows how much I love the sport. She sees me when I come back, and she sees the condition I’m in when I come back – you know – I’m spent in the summer. I’m drenched from head to toe, water pouring out of my body, and she knows I’m pushing myself hard. But she knows how happy I’m going to be when I get cleaned up and showered and take a little rest – she likes that time with me when I get off my bike – I’m just fun to be around. I’m a better person.

Finally, I asked Paul if he had any epiphanies or moments in cycling that changed who he was outside of the sport. He responded that he probably had such moments, but couldn’t remember one moment. Instead he offered cycling had changed him.

The direction I wanted to go in life or the kind of man I wanted to be. I always wanted to be a good provider for my family and to take care of my family and to do the right thing every day. I think that cycling helped me to keep those values and my morals. Cycling has helped me be a better man, be a better father, a better husband, a better employee. Just being out on the bike and pushing yourself gives you satisfaction when you get off of the bike. Everybody needs something in their lives that you do for yourself that brings balance to your life, and cycling has been my balance and my passion in life.

As we drew our time together to a close, Paul added that watching cycling on TV is not the same as experiencing the sport in person. He mentioned that you have to witness a bicycle race to hear the sounds, see all of the colors and the feel the movements by being there.

**Researcher reflection and analysis:** Paul’s reflection about witnessing a live bicycle race in comparison to watching it broadcasted on television speaks to the importance of engaging the entire body in the process of learning. Merleau-Ponty’s (2012) argues of the importance of
learning in moments when we disengage from our consciousness and allow our experiences to flow in and out of us like the ebb and flow of the tides so that they become part of us.

**Summary Analysis of Paul’s Interview**

In the analysis of Paul’s narrative, three themes emerged as a result of our two interviews together. First, Paul’s identity had changed as a result of his cycling experiences. Second, Paul’s relationship with his bicycle, set in a social context, produced both positive and negative experiences. Third, Paul’s perceptions changed as a result of his embodied experiences with pain and suffering he experienced while racing his bicycle.

Paul’s discovery of bicycle racing brought changes to his identity. Through his failure to finish his first several mass-start races, he found that in order to succeed, racing required him to confront his fear, required him to take risks, and to “work through it.” The result had Paul feeling emotionally stronger and feeling like he had become a “better man.” He said he felt happier when his body was fatigued after a long’ hard ride and that his wife enjoyed spending time with him after his rides. “I’m just fun to be around. I’m a better person.” Paul mentioned that the hard work he put into improving his body through racing and training reflected his morals and values of hard work outside of the sport. Without ever mentioning the term spiritual, Paul added that he wanted to follow a direction in life that allowed him to provide and care for his family and “do the right thing every day.” “Cycling has helped me be a better man, be a better father, a better husband and a better employee.” Paul also mentioned that he felt freedom when he was riding his bike being able to go wherever he wanted and to see the beauty in Lancaster County. Paul’s embodiment of freedom was the result of the symbiotic relationship he had developed with his bicycle.

It had taken Paul a great deal of time to develop his racing skills. The result was that he felt that he was “in-tune” with his bicycle. His years of racing and training conditioned his body
to pedal smoothly, ride in a straight line and operate his bicycle efficiently. As a result, Paul found that his legs produced a rhythm where they were just “systematically doing it on their own.” He described these positive experiences as if the bike were part of him. “You don’t even think, you don’t even move that bike. You just kind of go with it.” Paul had also discovered that his positive and negative experiences with pain and suffering changed his perceptions of “being in-tune with his bicycle.”

Paul knew when he wasn’t feeling well physically when he raced his bicycle, or if he had not slept well the night before a race. “I could barely stay in the middle of the (racing) field…you just pushed yourself just to hang on to that wheel in front of you.” He felt as if he was “all over his bike.” At other times, Paul explained that when he was racing at 85 to 90% of his maximum physical capability that “you got to a point in the race…you know, you’re just pedaling and you don’t even know you’re pedaling anymore.” Paul also described moments during races when his bike seemed to become part of him. “When you go through turns or maneuver around somebody, or…it’s almost like (his bicycle) steers on its own…it’s almost like it’s part of you.”
CHAPTER SIX: CHAD

Love the feeling of speed.
Descending, cornering, Love.
Many broken bones.

Chad is a 63-year old self-employed Caucasian male who works as a chemical consultant.

Chad and I both rode our bikes to meet for our interview, so we began by talking about our bikes.

We both not only regularly ride our road bikes longer distances, but often take short trips close to our homes on our “other” bikes – Chad was on his flat-finish, Army-green, hybrid mountain-city bike, I was riding my bright orange, single-speed, fixed-gear Motobecane-brand bicycle.

Beginning Connections

Born in a working-class family in a small town 10 miles outside of Boston Massachusetts, Chad began riding his bike into Boston when he was 8 years old. He realized at a young age that he enjoyed being by himself. At the age of 12, he got a job working during summer months in a grocery warehouse picking up cardboard. His job allowed him to earn enough money to buy his own bike. He didn’t work Mondays, so one day he rode to New Hampshire alone on his 10-speed bike, a 112-mile round trip. When I asked him if he had the approval of his parents to take such a long venture alone at such a young age, he responded that they had not known.

It was not good to be home alone with my mother, she was bipolar. My father worked a lot, so I would just go places. And it was sort of nice to go places. I lived in a town that was mostly Irish-Catholic, and although I wasn’t practicing Jewish, my father was Jewish. The Irish kids would beat me up because they considered me to be a Jew. So, I had a lot of other reasons just to go other places.
When Chad was 13, his bicycle was stolen one day while it was unlocked and parked near a trash pile on the edge of the Boston. He had taken the subway into the city on that day. He didn’t ride a bicycle again until he was 40.

I asked Chad what it was that connected him with his bike at such a young age.

I like to go fast. I was an incompetent baseball player. I’m left-handed, right-footed and right-eyed. I shoot on the wrong side. I mean I’m kind of a mess for the kinds of things like baseball and basketball – I sucked at those, but I was good on a bike. You know if you’re going downhill on a twisty road, smooth is fast.

Chad explained to me that he didn’t know bicycle racing even existed until after he left the country for his service in the Army. When he returned to the U.S. at age 40, he quit smoking and started running until constant injuries had him connect again with a bicycle.

I went to Harvey Williams and bought a $400 bike, you know, and I loved it. I needed to exercise more because I had been smoking. I rode a mile and a half around my neighborhood on that bike and threw myself onto the lawn…I was exhausted. But that was in the spring, and by the end of the year, I did the bike club 40-mile route around Lancaster.

**Researcher reflection and analysis:** The Sunday Ride is what local cyclists call Chad’s 40-mile route around Lancaster. It is a popular training route for both racers and non-racing club riders. Chad explained to me that his club rides got him really excited about riding his bike. He upgraded the wheels on his bike after a mechanic at the bike shop where he purchased his bike said that new wheels are the best bicycle upgrade you could get.

Chad said I paid almost as much for those wheels as I did for my bike.
Chad took a five-week self-improvement bicycle riding course offered by a United States Cycling Foundation (USCF) certified local racer. Chad recalls the instructor mentioning that if you want to ride faster with other people and you are training by yourself, ride hills.

Cuz you won’t be lying to yourself (riding hills) – if you ride on flat roads with the bike club to the east, you’re going to lie to yourself about your effort. If you ride south, you can’t lie to yourself.

**Descending at Speed**

Chad worked on refining his own descending and cornering techniques by riding south of Lancaster on River Road, a 32-mile long hilly road along the Susquehanna River. He described the feeling he got honing his skills descending hills.

The first time I descend down a hill, I’m looking for the braking spot. So, I go into the corner, you know, trying to decide…initially I just have to guess. So, I brake and then I let go of the brakes and counter-steer (a safer technique cyclists use to steer their bicycles at high speed which involves shifting their center of mass rather than moving the handlebars). And if I feel light, I go so low (bringing his mass closer to the ground by crouching on the bicycle’s top tube). If you’re going fast enough, there’s a moment (going through the corner) when it feels light – and that’s what I’m looking for. I love the feeling of cornering, because I don’t have a sprint and I’m always going to finish 20th. I love crits (criterium races) because if it’s 25 laps, I’m going to go through 100 corners and I’m going to get juiced on those corners – every time I’m going to go faster!
Chad’s Haiku poem reflects his love of speed he experiences on hills and cornering with his bicycle. The conversation shifted to how Chad’s bicycle is part of his riding experiences. I asked him about how his present bike is different from his $400 Harvey Williams bike.

For the last 15 years I have been riding nothing but carbon. The bike you say outside is metal, but as far as a racing bike, it’s been carbon and it’s vastly improved over everything that preceded it.

I asked him to describe more about how his newer bikes were vastly improved. No flex. In the axles, you don’t want any flex- they don’t flex. And they don’t break. The bike I crashed on Turkey Hill I rode today – I’m riding it 10 years later. I mean they’re indestructible and I never have to think about anything.

Chad’s Crash

*Researcher reflection and analysis:* Chad’s brief mention of his crash on Turkey hill made me reflect on the incident (Fig. 3-1). Although he didn’t discuss his crash further in our first interview, I imagine his reference to broken bones in his Haiku poem at the beginning of this chapter refers to this incident. I witnessed Chad’s crash as I was next to him when it occurred.

We had been descending the hill in a pack of eight other riders at 52 miles per hour when Chad’s wheel touched the rider just in front of him. Chad was looking for a clear route to pass the guy when he took his eyes off of the guy’s wheel for an instant. One thing that all cyclists learn quickly – if your wheel touches someone else’s wheel, you crash. I had caught the entire moment in my peripheral vision.

Remarkably, I was able to navigate around Chad without crashing myself. I saw him when he hit the ground – he was unconscious immediately from the impact – I saw his face for
just a fraction of a second - his eyes were closed and looked like the X’s of an unconscious comic book character.

When I got to the bottom of the hill, I was scared that he was dead – nobody could survive what I had just witnessed – his body tumbled over and over again until he lay motionless in a drainage culvert at the edge of the road. I came upon his pool of blood running down the road for 15 feet before I came upon his unconscious body when I returned to come to his aid. He was eventually transported to a trauma unit by helicopter.

Most of us went to the hospital when he was in the O.R. and lied to the nurses telling them we were family members so that we could see him. A plastic surgeon was completing his handiwork when I arrived. Chad had broken 12 bones including a cervical vertebra and had many internal injuries as well as scrapes and abrasions.

Chad’s Second Interview

During our second meeting, Chad actually brought the helmet he was wearing on his ride when he crashed on Turkey Hill. His helmet became a vehicle for both of us to revisit our memories of his crash more than 10 years ago. He pulled his helmet out of a plastic shopping bag and began his first-person account of the incident:

I really don’t remember anything, as a matter of fact, I don’t remember anything from that point (May, 2007) until the fall of that year. I don’t even remember re-enlisting in the Army.

Researcher reflection and analysis: Looking at Chad’s battered, partially shredded orange and silver Giro helmet not only re-connected him to the moment of the crash, but as I looked at the cracks, scrapes and missing paint for the first time, I felt like together, we were both on Turkey Hill once again. We sat together for several seconds through shared silence before he began
telling his story. His description of the incident began with an inability to produce words – he muttered some sounds, paused and ultimately seemed to be at a loss for words of what had happened that day on Turkey Hill. And it’s not just Chad and I that are at a loss for words as a result of his crash. I have often noticed that the mere mention of the story from someone who was there evokes silence throughout the group of riders on our daily ride – a silence pregnant with all sorts of emotion that undoubtedly takes everyone back to that horrible moment.

**Embodying Speed**

Another bike Chad loved was a single speed track bike he rode when his was deployed to Iraq a few years ago. Chad re-enlisted into the Army Reserves when he was 54 years because, as he said, *I could*. He described the feeling he got riding that bike around the perimeter of the base in full Army fatigues in the middle of the day often in 115-degree heat:

*I loved that bike because it had no gears, nothing on it, it just felt….it was this feeling of being part of it – and going down a big hill on that thing and going through a turn, where it had nothing that rattled, nothing…aw! It was awesome!* I then that asked him to describe more about how his bicycle became part of him for more details.

*Sensations! Because like one of the sensations I just love and it has *pucker factor* too! Like if the wind is coming out of the south coming from the Buck, and I hit that first descent right, I’m going 55-57 miles per hour, and I almost had a flat there once…a front flat at almost 50. I got it stopped (breathes loudly). Yea, Mike Billings was with me – it was like 20 years ago. But I like the sound of the spokes when you’re going over 50 miles an hour – there’s some other sound that*
they have…cuz when I’m going that fast and I’m down on the top tube I can hear it.

Chad’s description of descending a hill at more than 50 miles per hour makes him feel like he is part of his bicycle.

Oh, yes! Yes, because a two-wheeled vehicle is an unbalanced mess compared to a car – you know it steers with this entire…the whole vehicle is part of the steering process, so you feel it. I mean you can feel when its shoving itself into the road on it and when you lean far enough, there’s that moment of lightness – that’s weird, and it’s fun!

**Researcher reflection and analysis:** Chad’s vivid descriptions of his love of downhill descents is testimony to his embodiment of speed and sound – something he seeks out with great passion. He also embodies elements of fear while he reaches speeds on his bicycle where he can hear the sound of his spokes in his wheels. Chad’s use of the term pucker factor speaks to the risk factors involved with descending on his bicycle at high speed. Chad’s crash on Turkey Hill is an example of the negative results of “thrill-seeking” that resulted in injury as well as a learning opportunity for him (Brymer & Oades, 2009, p. 2). Chad’s story also intersects with how objects, like his bicycle, add to his embodiment of the experience of descending at high speed. Chad’s bicycle was an important object which not only shaped a vivid memory, but was very relevant to his learning experience (Olsen, 2010). Chad’s bike also helps him gauge how his body is feeling physically and emotionally when he rides.

I asked Chad if he could gauge by riding his bike whether he was not feeling well.

Oh God, yeah! I get the sensation that my legs are swimming – like I’m not going through air, like I’m going through a liquid. It’s a place where, if I’m feeling bad enough, you might be going uphill or around a turn, and I’ve looked down to see if my tire was flat – you know, that I felt so sluggish. It starts with
my quads. So, I feel it first here (points to the top of his quads). It just starts walking all the way up my back. So, the molasses is in my thighs (laughing).

Chad mentioned that he felt worse when he was riding alone when he had these sensations, so I asked him to give me a little more detail as to why.

Yeah, because you have an incentive to fight and not give up. The sense of unreality. I mean bicycle racing is deception anyway. I was riding with these really nice triathletes – Iron Men – in New York, because of a mutual friend. We were riding along and they said why are bicycle racers such assholes? Well, I said, it’s deception. They’re always lying to each other about how much they are training – you know, they routinely lie – and in this way, you are always trying to cover up your problems. But if you actually go out with other people and things get fast, you can’t lie to yourself about whether you can keep up or not. You know if you are marginal. But boy, when I’m alone…I can be involved with saying – you know, it’s not that bad, you know, I’m not going that slow…it’s amazing how much you can fool yourself. But riding with others, you’ve got that barometer there. When I ride alone, my cadence drops.

Chad described that his cadence averaged 80 rpm when he rode alone versus 110 rpm when he rode with other riders.

**Researcher reflection and analysis:** When riders agree to meet for a slow, recovery ride, it always makes me laugh. If you have a group of a half-dozen guys riding together, there is no such thing as a recovery ride – you have to be disciplined enough to ride alone to recover properly.

Group rides often begin at a leisurely pace, by then, someone is always feeling good and it sparks energy into the other riders. Soon after, the whole group is in racing mode. If you don’t comply, you get dropped.
It’s as if the pack has a life of its own. My own cadence of peddling also increases when I ride with other riders. There seems to be a collective energy of excitement among riders in a pack. There can also be a feeling of protection when you are in a large group of riders. Automobile traffic views us as a larger entity too. We are afforded more of the road and greater respect due to our size. Like a school of fish, the mass increases the survival of each individual member by lessening the chance a predator will find them.

Next, I asked Chad if what he learned through cycling transferred to other aspects of his life and how.

When I re-enlisted in the Army, I was kind of worried about what happens when I’m in the culture of 19-year old men. I might be a problem for them. They have to rely on me, so I went back in as an aviation mechanic not a foot soldier. But that was partly because I didn’t know if I’d be in good enough shape. Not it turns out, I learned how to suffer on those bike rides. I knew that those little kids would crack…you know and I knew if the weather sucked or if it was hot, or if I didn’t have enough water – I could go at 95% for an hour – whatever I was capable of for an hour and spit – yeah!

I asked him if he learned about his endurance by riding his bike.

I learned that doing time trials (individual bike race against the clock).

That I could go with a max heart rate of 184 (beats per minute) for an hour.

**Sensing Pain**

I asked Chad if he experienced pain during his time trials.

I hate time trials. I was in agony. The first one I did was up north of Scranton. I did a good time for me – an hour and one or two (40 kilometers in 1:01 or 1:02).
I came back and almost cried just wiping the bike off. It was raining at the end and I was in so much pain – I mean between my thighs it hurt here (pointing inside his legs). Somebody asked me how it felt – I’m in Graterford (Prison) and I just got a 300 Lb. roommate (laughing) – cuz it hurts so much between my legs.

Chad also told me about a race he did to the top of Mt. Washington, New Hampshire back in the 90’s. Inside another plastic shopping bag he brought to our second interview was the bicycle crankset he had broken on mile 4 of the 7.8-mile ascent to the mountain’s summit.

I ran the rest of the way up in my cleats. The last two miles average over 18% grade, so I was passing guys on their bikes. You know at 18% the bike’s a liability. They (the other riders) told me to turn around and just roll down to the start line, but I didn’t – I just drove 10 hours to this race so I just started running and pushing the bike.

I asked him what he meant by the bike’s a liability and to describe his experience riding his bike before he had broken the crankset.

The bike is horrid. I thought I had a flat, but I knew I didn’t – the bike felt so bad – the bike feels like crap.

Chad quickly transitioned to another story where he described a situation in which his experience on his bicycle was the opposite.

I went down that hill on that single-speed, noiseless bike and just felt like I was completely part of the bike and the bike was part of me. You know, there was no gear sounds, there wasn’t anything – any curve I moved through there was nothing.

Researcher reflection and analysis: Reflecting back on Chad’s description of the discomfort he experienced riding his bike, I wanted to know why it seemed like cyclists often embraced physical or emotional pain and discomfort. Athletes of extreme sports
gain knowledge through pain which can be interpreted as a meaningful way to construct knowledge (Brymer & Schweitzer, 2012).

Fear is also a strong emotion Chad noticed among other cyclists that keeps them from the risk of injury during mass-start races.

Resisting Pain

When I asked Chad how he could tell that other riders were so fearful of being injured in a crash that it prevented them from racing, he told me a story about several people who indicated to him that they wanted to race, were fit and fast on the bike, but would never be racers.

I’ve known a half a dozen guys like this - the ones that come up to me and say look, I want to race, but I don’t want to crash, what should I do? And I say (whispering) knit, don’t race, because you’re gonna crash. And the other ones…Ok, I’m gonna do it! You know the one crash out there and they blame their wives – you know spouses use each other for excuses, but it was them! And you could see it in their eyes – it was them! People get jazzed by adversity or they get crushed by it – it’s something that comes with the package rather than something that you learn.

Researcher reflection and analysis: Chad’s description of pain being part of an individual’s make-up rather than something racers develop made me think about my own experiences with the risks of racing. Perhaps there are additional elements to consider that includes elements of learning. As an example, young, single athletes with few responsibilities may find it easier to take risks racing their bikes. But cyclists often have responsibilities to provide for their families and need to consider the results of a crash that may incapacitate them for periods of time or even
permanently. Chad’s comment about bike racers getting jazzed by potential adversity through bike racing parallel’s Brymer and Schweitzer’s (2012) study of extreme sports that finds athletes lose their self-identity through emotions such as fear.

Reflecting on my own experiences, I had little fear about anything when I was younger. But in adulthood, fear became a real factor in many of my risk-taking decisions in sport. When our first child was born, I knew intuitively that my world had changed forever. I suddenly felt responsible for the life of someone else. Another reason was the horrific crashes I had witnessed over many years of competitive road racing. The embodiment of negative pucker factor often has my legs shaking and often produces an electrical sensation in my pelvis when I experience fear. Next, I offer one example of a crash that made me often reconsider why I raced a bicycle.

Racing at the Lehigh County Velodrome, I witnessed a rider fall from the top of the track (the 333-meter oval loop of concrete with 12.5-degree banking at each of the 4 corners) at the first corner after the finish of the race immediately before my own. I was at the edge of the track in the racer waiting area when I heard a loud pop after his head hit the ground. The rider’s unconscious, limp body rolled on to the apron of the track. They transported the guy from the infield to a nearby trauma unit in Allentown via helicopter. The next week at a road race, I was cued up at the line getting ready to start my race when I noticed a race official from the previous week on the track. I asked her if the guy that fell was OK. She looked at me as if I was making a joke, but when she realized I was honestly concerned about the guy, she said “he’s alive, but there’s nobody home.” I will never forget her words, as they became an instant tertiary memory to me. I often think about them, and at the moment she spoke them had had me questioning the risk I was taking with my life with respect to my responsibility to my wife and family. It also had impacted my decision to continue racing.

Chad added some philosophical grounding for his comments regarding pain as a package.
Is a certain person a racer, or are the people who are going to be racers a certain kind of person? I mean, which is it? You know, does the activity select or do people select the activity? But I know if you’re gonna hang around in an activity or something, you’re going to have to be sympathetic to its lifestyle.

**Racing Culture**

Chad then described road racers and Army sergeants as uniquely similar and often self-identify as such.

Those two – Army sergeants and road racers – I know more self-described assholes – people who say yes, I’m an asshole, and I should be an asshole, and I’m proud of being an asshole. There are more per capita among bike racers and Army sergeants than anybody else and any other group that I am part of. I’ve been in running clubs – nobody says I’m an asshole in a running club.

Chad’s description of bike racers was a segue to probe a bit more about the sub-culture of roadies. I asked him if he made any observations about bike racers over the years he had been racing.

You mean like gossipy, backstabbing, full of hatred?

I asked him to describe his perception of its uniqueness as a culture.

It’s a performance culture – everyone depends upon everyone else, because we’re drafting. But the converse of having great dependence is not charity, right? It’s judgment. I mean it’s a danger – you’re looking at everybody saying do I want to be near this guy?
Chad made a distinction between bike club riders and racers by explaining that bike club riders want to ride in a group and include their families in all of their activities. Racers, on the other hand…

I mean if they’re good at what they do, they just want to win. You know they’re deceiving each other, and they’re judging each other, and they’re using each other if they possibly can. I mean everyone complains about *wheelsuckers*, but they admire them if they can wheel suck their way to a win, right? So, the super-sprinters that just loaf off of the back of the pack the whole time and blaze out (to win at the end) – yeah, we admire them at the same time we hate them. But we do express our hatred for riders who aren’t there to the riders who are (laughing).

I asked Chad if he was able to recognize racers versus cycling enthusiasts when he was riding his bicycle.

(Laughter) so you know how in Pennsylvania the hills are such that you can see hills a half-mile away like on (PA State Route) 999? So, you crest one hill and you see someone on the next crest? I could tell if it was a racer or a tourist.

At that distance? I asked.

Yes, from that distance from their peddling. And if for some reason we were able to catch up to them, I don’t think I was ever wrong. Pedal speed, smoothness, the way they sit on their bike – racers and tourists sit differently on their bikes – but it’s a lot of intuition. Intuition is a whole lot of observations that coalesce in your mind in a way that you may not be conscious of it. The judgment is snap. It’s not like I observe and take in 18 criteria – it’s just – oh! That dude’s good! You know?
Scheduling Fitness

Chad then described a young rider who became a National Champion very quickly. Chad said he knew when he first saw him on a ride that he was going to be great. I asked him how he knew by watching him ride that he was going to be a great rider.

I mean, oh my God – there’s so many things that you can differentiate people (by watching them) in a paceline – how do they follow people, their smooth peddling, their speed, how do they follow the rider in front of them – I mean, I don’t think I have it, but I mean I sure can appreciate someone who barely makes a move – it’s their legs and the rest of their bike (whispering) it’s straight – that’s pretty to watch. Yeah, and if somebody’s not good at it, it’s not pretty to watch.

As my interview with Chad came to a close, I asked him if he had learned anything by being a racer that had transferred to other aspects of his life. Chad mentioned that if older adults want to stay in shape they need to have a schedule.

If you don’t have a habit of fitness and you want to get in shape, there is nothing you need more than a schedule. Passive people, of which there are many, let their circumstances run over them. A bicyclist who has any kind of commitment to the sport is going to have to carve out enough time that they have to make in their life.

Chad explained that cycling has been so important to him, that his children needed to realize that he would not be at all of their sporting events and that he negotiated time that he would not be available for telephone conversations with his clients with his employer (when he was working for a dot com (.com) company in the past).
I mean I’m their communications consultant, but this is what we’re doing – I negotiated this long contract around the River Ride. If you don’t get obsession, then you’re probably talking to the wrong people.

**Researcher reflection and analysis:** Chad’s obsession with the importance of cycling in his life made me reflect upon my own obsession. I negotiated a morning duty when I was a high school teacher with my building principal so that I could leave immediately after the busses left, travel 50 minutes home, change and make the 4 PM daily ride. and I did this for more than 20 years. Many other riders on that ride had to negotiate similar agreements with their bosses or wives too. I knew other teachers and perhaps the kids that I was teaching thought I was shirking my responsibilities, but the sport of cycling had totally consumed me just it had with Chad.

**Summary Analysis of Chad’s Interview**

As a result of our two interviews, Chad’s story reveals several ways that he has experienced learning through his body while riding his bicycle. First, through self-inflicted pain and suffering he endures racing and training on his bicycle, he has developed autonomy and self-confidence that has shaped his present identity. Chad has learned that through pushing his physical limits and enduring discomfort, he has been able to transfer this knowledge into other aspects of his life. By embracing pain, Chad has discovered that the result of his investment with physical discomfort and its long-lasting emotional effects, produces sensations of joy in his life.

Chad has also discovered that through his bicycle, he experiences feelings of great satisfaction with speed and gravity. Through his embodied experiences with descending hills, cornering as he counter-steers by moving his body on his bicycle, his bicycle has shaped his individual identity as well as his identity in a social context with other riders who are part of his cycling community.
Lastly, Chad has learned that through the fitness he has gained racing and training on his bicycle, that in order for other people to develop a habit of fitness in their lives, they must negotiate time in their schedules both with their families and with their employers. The alternative is living a passive life where people let their “circumstances run over them.” Chad describes the importance of fitness and cycling in his life as an obsession. “If you don’t get obsession (through cyclists who are committed to the sport), then you’re probably talking to the wrong people.
CHAPTER SEVEN: RORY

Rory is a 70-year old self-employed Caucasian male born in an upper middle-class family. His father was a land owner, a car dealer and a semi-professional golfer. When I arrived at his city home (his main home is on a 25-acre non-working farm 10 miles outside of Lancaster), his carbon-fiber Carrera racing bike was leaning on the porch outside the back entrance. Rory rides his bike to work every weekday, skipping occasional rides only in the poorest weather conditions. He leaves for home promptly at 4 PM and as a result, his route home has been a popular training ride among local racers for years. The ride has been named by other riders using his nickname, and is almost universally known among the local community of racers. Our interview began almost 45 minutes after “catching up” with each other’s recent life events over tea. I had been riding with Rory regularly for more than 25 years on an almost daily basis, so we had developed a social relationship both on and off the bike.

Wanting to know more about how long he’d been road racing and about the bicycle he rode to work that day, I asked Rory if he would tell me a bit about his bike and how he got started in bike racing.

I’m going to say give a year or two, roughly 35 years. You know, things really haven’t changed that much. I’m still riding a diamond-shaped frame with two wheels. It is much more refined and the materials are different, but it’s still a bike.

I asked him if he rode his first racing bike today whether he would notice something different compared to the bike he rode today.

I still have that bike that I first raced, and I infrequently get it out for sentimental reasons and it’s really not bad you know – it’s heavy.
I had seen Rory’s Raleigh International bicycle on several occasions. I was curious about Rory’s use of the word sentimental, so I asked him to elaborate on why he used the term. Sentimental may have been a bad choice of words – what I find very interesting is that I have the same sense of mild euphoria now that I did when I first started riding a bike and I think that is why so many of us have continued to ride bikes or quit riding bikes and sooner or later came back, because it’s fun, it’s really fun. But I don’t have to tell you that (laughter), you’ve come and gone dozens of times!

**Attaching to the Bicycle**

Rory’s daily routine for more than 35 years most often begins with a lengthy bike ride, so I asked him what kind of feelings he experienced on his morning rides.

Actually, that is very interesting. I still enjoy getting up and getting out, it’s been a lifelong meaning. What I’ve noticed over the years since I used to be pretty impervious to weather and now I hardly ever get out in the rain, there was a point where I would commute in virtually any temperature. And now if it’s under 15 or 20 degrees, I think about, you know, do I really want to do this?

I wondered what motivated Rory to get up at 7 AM and venture out into 15-degree weather, so I asked him to tell me.

What made me suck it up when I was younger? I really liked it and I think, like most of us, there’s a little compulsiveness to all of it. I don’t think you get good at riding a bike without having a certain element of it being a compulsive activity.
Researcher reflection and analysis: Rory’s comment about his compulsiveness about riding his bicycle made me reflect upon my own compulsiveness. I thought often about riding my bicycle during the day when I was teaching high school. I would daydream about the beauty of The River Ride’s scenic route that twisted through woodlands and farms along the Conestoga River, or I would think about my present fitness level or even just anticipating being with my social network of racing friends. I thought about riding when there was five inches of snow on the ground – fearing I would lose fitness if I skipped a single day of training, so I would ride on my indoor rollers or stationary bicycle trainer. I developed pneumonia on four different occasions because I ignored the symptoms of a chest cold to feed my compulsion of feeling like I needed to ride. The compulsion starts slowly, but often grows to envelop you. In my experience as a cyclist, it was addictive. I often skipped faculty meetings or shirked other professional work responsibilities to ride my bicycle.

So, When Rory told me about his compulsiveness in riding his bike, I asked him to elaborate on his experiences with compulsion.

I’m going to guess I grew into it. The first year I rode 5 – 6,000 miles. And then it developed into basically averaging 12,000 miles per year, and I think on it now and it had to be compulsive. You know, I had to ride x-amount of miles every week, every month and every year. I certainly don’t regret that, but I think it would be less than truthful to say that there wasn’t some compulsiveness involved.

I asked Rory if the bicycle had shaped him in any way.

Oh yeah, sure! (laughing) I’m not sure how, but I know that it has. It’s rightly or wrongly – I don’t want to make a value judgement here - It’s a major component of my life and it’s a way that I identify myself and I think people identify me….and again that’s neither good nor bad – it just is.
Shaping Change

I asked Rory to consider how his bike shaped him individually and through his social connections to other bike riders and his cycling community. I began by asking him if spending all the time he had on the bike shaped him in any way.

I guess it couldn’t be otherwise. I mean, and if nothing else, a lot of time for introspection. In the mornings when I ride alone – and that’s been an average of an hour and 20 minutes a day, I have had the opportunity to think about a lot of things (emphasizes a lot). It’s given me a sense of self, and I guess a sense of identity. And it’s been really satisfying – it’s been helpful in helping me organize my sense of priorities – and I’m not sure how that exactly played out – but, clearly anybody that spent as much time as I have – and there’s lots of people like me – you can’t deny the influence it’s had on an individual.

I asked him to take me through his first hill climb of the day on his bicycle – to tell me what he experiences through his body.

I’ve got five minutes of going slow – it’s pretty hard and generally on a climb like that I am thinking specifically of what I am doing. Okay, this feels a little hard, that feels a little hard – and so I am conscious virtually of the whole kilometer of where I am on the road …. I have found over the years, to me at least, to occasionally think …okay, I just went three or four miles and I don’t remember it, you know, because…I don’t know what I was thinking about! Oh yeah! Here I am four miles down the road and I hadn’t given it any thought…I don’t think it’s a sign of mental incapacity on my part, it’s just interesting how you kind of get transponded (unconsciously moved?) to another area.
Researcher reflection and analysis: The word transponded, which Rory used to refer to his momentary escape from conscious thinking (I think he may have meant translocated), made me reflect on my experiences getting out of my head and into my body on my bicycle. The repetitive movement of each pedal stroke, the sounds of my breath cycles, and of the chain moving over my bicycle gears, of being away from thinking all of the time – they all seem to be factors in getting lost on your bicycle. It’s harmonic, rhythmic and may be part of what takes me out of thinking and into the corporeality of my body.

Merleau-Ponty (2012) argues the beauty of the world can be seen in moments when we can disengage from our consciousness and allow experiences, like Rory describes when he gets transponded on his bicycle, to flow as we merely experience things. In this way, Rory’s escape from conscious thinking reflects Merleau Ponty’s (2012) position of “being in the world”; an intimate transcendence into introspective awareness (p. 84).

When I asked Rory about how cycling shaped changes in his social identity, he explained that currently almost all of his friends are bicycle riders.

When I started riding bikes seriously when I was about 30, I had a set of friends – you know high school friends, work friends, blah, blah, blah. And when I look back now after riding for 35 to 40 years, with the exception of a couple people, most of my friends are people I have ridden bicycles with. When I reflect on it, it seems really kind of odd. And because we’ve shared a lot of time and experiences together, there’s a sense of accomplishment by both riding and racing a bicycle that is most easily shared with people who have done it themselves. So, I guess in a sense it is kind of natural. With most of my close friends now, there’s some kind of bicycle connection.

I asked Rory whether the people he rides with on his daily commute home from work are part of his personal circle of friends.
Absolutely! And whether we are talking or riding hard…and when we’re riding hard, someone is usually still talking – and they’re usually the strongest in the group (laughing). Oh yeah! It’s totally social! Some guys are just in it for exercise, and it just happens to manifest itself through their bicycle. They would be totally happy lifting weights, running or whatever. Most everyone who gets involved in cycling truly likes riding their bicycle. There’s a sense of freedom of being outside in nature. I can’t relate to one of my fellow competitors who was never really a friend who said I don’t even like riding my bike – I just like competition. It struck me as so bizarre. I wouldn’t be doing it if I didn’t find joy every time I get on my bike – and I do almost without fail.

**Researcher reflection and analysis:** Although we often talk during Rory’s daily rides, much of the joy I experience riding with this group of men and women is a silent form of social communication. The feeling of just being together, sharing a common bond through the love of cycling, being outside, the safety of riding in a large visible group – it really is, as Merleu-Ponty (2012) argues, an experience of “being-in-the-world” - a feeling I gain throughout my entire body. (p. 40).

I wondered what it was that kept Rory so connected with his bicycle and to those with whom he rides. So, I asked him to explain more about what he was feeling.

Well I don’t know whether it is psychological or physical, but the endorphin thing I take to be science, so it is probably an addictive physical thing. But the social part of it is something you can actually qualify. I don’t think I can generalize too much, but cycling has an array of people for sure. Socio-economically, educationally, politically – they tend to be a bit more tolerant as a result of the experiences they’ve gained from riding a bike. They’ve all been run
off the road a thousand times, and if they choose to be pissed off or not, it’s a pretty good mix of people.

**Embodying the Bicycle**

I was curious about Rory’s bicycle as an object that had such a strong influence shaping his perceptions (Olsen, 2010). He seemed to take great pride in all of his bikes (he had quite a few) and they were all very expensive. When I asked Rory about his relationship with his bicycle, he balked and responded with laughter:

That’s a little weird!

I elaborated a bit more on my use of the term relationship by using the term team instead. He liked this better and replied:

I like the aesthetics of a bicycle, and I’m appreciative of nice bikes, but I don’t know if I ever thought of it that way…. but now that I think about it, I guess it really is a perfect team. It’s doing its job, I’m doing my job, you know? And we’re not bothering each other.

I then asked him to describe riding his old bike the feelings he got peddling up the hill that begins his morning ride commuting to work.

Well, it’s noticeably more sluggish, and I’m really into angles of bikes you know…. I really got hung up in the minutia of the certain rake angle of the fork and how it effects this or that….my steel bike was more stable – steel bikes are really nice. They are a bit more substantial and a bit more forgiving in terms if you oversteered or understeered – the ride was always pretty nice…more comfortable.

He compared his old bike with his new bike…
This bike (pointing to his carbon-fiber Carrera through the window) is lighter and more compact. It reacts quicker than the relaxed geometry of a steel frame.

After describing the role of his bike as more utilitarian to get from one place to another, he again mentioned that the aesthetics of bicycles was more important.

You know I’ve always been an Italian-phile. So, I suppose I like form over substance. I’ve always used Campagnolo parts which are aesthetically very pleasing and a lot of blinged-out carbon – pretty showy stuff actually. I’m not a wheel-guy. They’re dreadfully expensive and I’ve always had a decent set – not state-of-the-art, but very high-level racing wheels. I don’t want to shell out tons of money for something I’m going to use a dozen times a year.

**Researcher reflection and analysis:** Although Rory balked at the use of the term relationship when I asked him about his bicycles, he obviously gains a different perspective through his attachment to his bicycles. He is “in-tune” with his bicycles from an aesthetic standpoint as well as with his environment as, through his body, he learns about how his is feeling physically and emotionally (Brymer & Gray, 2009, p.7). Rory’s introspective moments on his bicycle also speak to the “symbiotic” relationship he has gained as a result of being one with his bicycle leading to in his embodiment of feeling harmony while he rides (Brey, 2000, p. 1).

**Rory’s Second Interview**

At our second interview together, the conversation began with Rory’s description of his experiences embodying connectivity to other riders while he races. It is interesting to note that Rory preferred not to share any bicycle related object artifacts during his second interview. I asked him if he had brought things related to his racing, what sort of
artifacts he might share? He offered that although he had a “black duffle bag of medals” at home, he was not going to bring them to our second meeting. He would have had to carry them on his bicycle, however, on his commute to his business in the city where our interviews took place. Rory explained that he has learned much about himself and his racing skills through his racing perspectives and the knowledge he has gained racing with other people.

**Embodying Interconnectivity with Other Racers**

Rory first learned of his natural racing abilities through his first several failed attempts at mass-start road races. Knowing that he has won several national titles in road racing and individual time trial racing, I asked him to describe his first failures.

When I think of describing how I feel in a race, one of my threshold moments was when I first started racing – it was just awful. I had always been a reasonably good natural athlete. I think I raced for over a year without ever finishing a race. I was not accustomed to that kind of failure, and I just couldn’t understand it. I would at some point in a race say I can’t go this hard any longer. And I would look around, and everyone else looked just fine. So, you know you’re awash with what a sense of failure you are in this specific thing. So, I eventually started time trialing – you know, you just ride from point A to B as fast as you can. I almost astounded myself, because I started winning almost right away. And at the same point, I’m not finishing mass-start races and I’m thinking what the hell’s going on here? It’s apparently not a physical thing…it must be a mental thing. And then slowly over the next couple of months, I remember the first mass-start race that I finished – and it was a real high-water mark. A huge burden was off of my
shoulders and that confidence became a building block to translating into actually being competitive in races, and being a real part of a race. It was an extended ah-ha moment for me.

**Researcher reflection and analysis:** Rory experienced a disconnection from the other riders in his first several mass-start races due to his inability to finish with the group. His failure to finish with the group of riders that started his races confused and disoriented him. Once he gained confidence by racing on his own through winning time trial races, his success soon began to translate into learning to be successful in mass-start races. His feeling of confidence that he gained in time-trial events changed his perspective in mass-start races. His eventual success in mass-start racing relates to Crossley’s (2004) study of the reflexive practices of circuit training athletes. The embodiment of new habitual practices may be learned and developed among athletes when they put themselves in unfamiliar situations in order to begin “catching on to the game” (Crossley, 2004, p. 53).

Rory also began connecting to other racers, through his confidence and feeling like he was part of his races. I asked him to tell me about how he is able to embody a connectivity to other racers through their unspoken body movements and gestures.

I knew I was never the fastest guy in a race, so my strategy was constantly to cull people from the field. I would try to do that by cutting the field in half by taking several really hard efforts – you know, trying to get rid of the guys who are going to beat you in the sprint at the end of the race. In my career, I’ve always raced with the same guys who 10 out of 10 times were going to beat me at the line. So, it was imperative to get somebody else to work really hard to get rid of those people.

Rory described how he finds other racers to work with him as a strategy to get rid of the fast sprinters. I asked him what knowledge he is able to access through his body in organizing his
breaks with other riders knowing that during hard, long physical efforts conversations normally do not happen.

The aggressive guys and the fast guys are usually two different groups of people. The fast guys usually know they don’t have to do any work, because all they have to do is be there at the end. Sometimes we would just tail them off – just keep leaving gaps between the other guys and the fast guy to make the fast guy have to close it. It’s a pretty successful tactic.

Rory told me about a specific racer, a super-fast sprinter, at a race in State College, PA. The guy was a track rider and used to race professionally as a Keirin racer in Japan and just before he began to race as an amateur on the road held a world title in the sport.

Just as the race was about to start, Tyler came up to me and said you’re not getting away and I’m not doing any work. The guy was in another league – really. For whatever reason, he had heard my name and thought that I’d be a threat to him, which was just ludicrous. And he literally followed me around the whole race – and quite successfully I might add. Every time I tried to get away – which was the only way I could have possibly had a chance to win – it was the only effort he ever made. In a way it was flattering, but mainly it was just – I can’t believe you’re doing this for God’s sake!

Thinking about what Rory said about tailing off sprinters, I asked Rory if he was able to tell when the riders were ready to give up.

When you see the pros on TV, they’re usually pretty stoned-faced. But for most of us normal people, you can usually tell when somebody’s in distress. They have a look all over their body like – I’m not going to chase him anymore, maybe we’ll catch him later, maybe we won’t. You can see the good riddance – you made this race so unpleasant that the rest of us – we’ll just go along now at our
pace – have fun! There’s a resignation – you can see it in their body language – you see it outside of cycling when someone is waiting to get in a crowded elevator or on a bus that’s full – they just shrug their shoulders like oh, well I’ll wait for the next bus. It’s literally like popping a balloon and having all the air go out of the balloon – you can see it.

**Researcher reflection and analysis:** Gendlin’s (1996) theory of felt-sense focuses on the value of our intimate connectedness to the experiences we have. When Rory sees his hard work and effort come to fruition through the silent language conveyed through bodies of the sprinters who finally give up after his repeated attacks, he feels a connection to the other riders with whom he established the race breakaway. The riders embody a shared feeling of success that arrives to them through their bodies before any reflection or dialogue takes place.

**Summary Analysis of Rory’s Interview**

Rory’s interviews revealed that through his more than 35-year career racing his bicycle, that his bicycle has not only shaped his individual and social identities, but has brought him lifelong meaning and happiness. His older bicycles represent symbols of aesthetic beauty to him and when he rides them he experiences a “mild euphoria.” I would argue that Rory has a spiritual connection to his old Raleigh International bicycle equipped with decades-old Italian-made parts he identifies with so sentimentally.

Rory experienced a “threshold moment of failure” when he has found he was unable to finish many of his initial mass-start bicycle races. But through the confidence he developed in himself racing alone during time-trial events, he was able to overcome his feelings of failure which eventually translated into a competitive spirit where he was ultimately able to “catch onto the game”, and through which he experienced a feeling of “an ah-ha moment of success.” In the
past, Rory has held the title of United States Cycling Federation National Road Race Champion and has won medals in this competition at least 10 times during his cycling career. As a result, he has become a local and regional legend in his community of bike racers.

Rory also is able to experience, through riding his bicycle, an awareness of every movement in his body when he begins his early morning commute to work. After several miles, those negative feelings give rise to smoothness and a partnership he describes as “my bike and me are not bothering each other, a partnership of “a perfect team.” During some moments, Rory has experienced transparency with his bike through feelings that he has forgotten how he rode from one location to another “several kilometers away.”

Rory has also learned to be a more tolerant person by riding his bicycle. He has been run off of the road by countless motorists over the years, but he argues “we choose to be pissed-off or not.” He has experienced lots of time for introspection during his one hour and twenty-minute commute to work, and the result has produced not only a clearer sense of self and a sense of personal identity, but also has been “really satisfying (and) it’s helped me organize my sense of priorities.”
CHAPTER EIGHT: MYRA

Wind biting the face
Peloton protects riders
Joy when we win race

Myra is 46-year old Assistant Director of Experiential Learning in Higher Education. She is Caucasian and grew up in a middle-class family. Myra met her husband while racing her bicycle, and together they share a strong passion for the sport of amateur rode racing. It has been a strong focus of their adult lives. As we began our interview together, Myra responded to my initial questions with very brief responses. I felt as if her answers were forced and that she felt uncomfortable being interviewed. As a result, I shifted my questions away from her background as a child when she first began riding her bike to when she first began racing her bicycle. Myra’s bicycle had also been part of her daily routing commuting to and from work for many years, and thus, her passion for riding began to emerge and her responses lengthened and our conversation deepened. From her body gestures and facial expressions, it appeared that she was deeply connected to riding and racing her bicycle. Cycling had inspired Myra not only to be more disciplined in her life, but to be more aware of the world around her. I asked her about how she had developed the fitness necessary to race.

So, to develop fitness, there’s training and diet. So, with all of that there’s discipline, and so that crosses over into needing to be organized with everything else that is going on in your life. Organizing my schedule in order to train and race just became part of how I fit it into working and going to school.
Learning to Shift

Myra’s perceptions of the world around her had shifted as a result of her cycling experiences. Not only was she more disciplined and organized in her work life, but she became a better driver by being more aware of her surroundings.

I think as a young adult I was a distracted driver. But today, it’s ten times worse with cell phones, but as a bike rider I just became more aware of my driving habits. I had to be mature enough to say okay – I was not responsible in this area, so I took a break from driving cuz that helped me in the sense of my insurance and not getting any more points on my driving record. By riding my bicycle, I became more aware of my environment around me I enjoy – it went back to when I was younger enjoying the farmland, even though I’m riding through the city, it was more engaging than driving.

**Researcher reflection and analysis:** Myra chose to ride her bicycle as way to promote her own social action of mobility as a result of the realization that she was a distracted driver. Finchman (2006) posits that although cycling is a slower form of transportation, it can be just as fast in urban settings. Furthermore, bicycle riders are not dependent on fossil fuels and often experience a sense of freedom from being able to navigate in public spaces that limit automobile movements (Finchman, 2006).

Discovering her passion for cycling had been a good thing for Myra that extended outside of the sport of amateur road racing.

Cycling kept me out of trouble. It kept me from blowing up to 300 pounds and provided me with some level of discipline and a connection to my cycling community. Not only by meeting some really good people locally, but in my travels. I had been racing all over the country. I got to meet people who would
host us. They would just love to host athletes – and to get to know people from a different region of the country. I think cycling has been a way to create bonds that can connect people. You know, whether you are watching a soccer match or you’re in a pub and there’s different nationalities – whether you and I are cheering for different teams – we’ve got a common bond – there’s that connectedness with the sport.

**Reading the Culture of Cyclists**

Myra explained that one of the dominant women racers on her team had a very bad crash in the last corner of a race when her need to win had led her to misjudge her speed. The corner was off-camber and she had approached the corner too hot. Her bicycle shattered into several pieces after hitting a curb as a result of the impact.

It was bizarre. She didn’t think about the bigger picture of the team – you know, we needed to make sure JoNette won because she was winning the series.

Myra’s perceptions of bicycle road racing team tactics made me think more about bicycle road racing’s unique sub-culture. There seemed to be so many visual cues that that helped riders identify themselves as part of its culture. I asked Myra about her experiences and observations of other cyclists she saw over the 20 or more years she had commuted 14 miles to work and back. She explained that her commute time did not really change in length, but that it offers several other benefits. I asked her to tell me about her commute.

I’m a little slower on the bike than I was 20 years ago, it now takes me 30 minutes. But in the car, it can range from 20 (minutes) or longer with all of the grid-lock traffic jams we have here. So, with riding a bicycle, I get a workout, it
saves me money on gas, and it relieves stress. I can enjoy the commute home to work.

I asked Myra if she sees other riders along her commuting route, and if she is able to recognize them as commuters or racers by their clothing or bicycles.

I think I can, but that doesn’t mean I can. A commuter usually has panniers – you know, bags on their bikes or a backpack, or they’re wearing different gear. They usually wear regular clothing. I’ve tried that and I can’t go seven miles in regular clothing. I came from riding in Spandex – looking like a road cyclist, so even when I am commuting I’m wearing Spandex because it’s just more comfortable. I can also identify DUI (persons convicted of driving under the influence of drugs or alcohol while operating a motor vehicle) individuals because they need to (ride a bike) because they can’t drive. They’re usually on a mountain bike and riding against traffic, and you’re not supposed to do that - they’re not following any traffic laws.

**Researcher reflection and analysis:** I have made similar observations of cyclists who disobey traffic laws such as riding their bike on the wrong side of the road, and think they may have had their driving license revoked. Although Myra asserts that drivers who ride a bicycle by necessity due to an infraction with the law, help contribute, through their mere silent presence on the road, to the advocacy for shared public roadway use by non-motorists (Wilhoit & Kissleburgh, 2015). Furthermore, she and the DUI guy are making a political statement challenging the perception of automobile drivers that roadways are only for automobiles (Doughty & Murray, 2016).

Myra explained that she could also identify avid cyclists or racers on the road. They’re on my commute, (laughing) so I know who those road racers are. We also have a lot of avid cyclists who don’t necessarily race, but I would cross that avid cyclist with a road racer. In the summer months if there’s a guy I see that
has shaved legs, I assume he’s a racer. He could be a swimmer, but you could tell
by the muscles – the shape of the muscles – if they’re a swimmer or not.

As our conversation shifted to racing culture, Myra offered that she observed mountain
bikers to be friendlier than road racers. I asked her to tell me more about roadies as a group.

**Gaming Face**

It seems more so with the road than it is on mountain bikes or with cross riders. I
always chalked it up to personality differences rather than socio-economics. You
need to have money to have a bike – it doesn’t matter if it’s a mountain bike or a
road bike. Before we race, during a warm-up, racers seem to change – they can
be so unfriendly to each other. They have their game face on. You know, before
the race, everyone’s friendly and talking to each other – I take that back – it’s
usually after the race. But before the race, people need to do their routine – and
that’s the thing about racing people are often in their own little worlds. I could
tell from their body language that they didn’t want me to warm up with them. It’s
like two football teams warming up on opposite sides of the field. So, with
cycling, you are either warming up with your own teammates or doing your own
thing on your rollers or trainer. If you try to be social – walking around and
talking to everybody, it would mess up their race at some point because you’re
trying to be a social butterfly. That’s how I knew I was done racing, because
that’s what I ended up doing.
Feeling Discomfort

I asked Myra about moments that she felt good riding her bike. I wanted to know what was going on in her body during those moments, so I asked her to describe some of them. I think it’s fascinating that something like a little gear that’s not meshing can interfere with your concentration sometimes. Sometimes it’s my body telling me I was exhausted from the training I had done that week or weeks prior – it makes me feel heavy on my bike.

I asked Myra to tell me more about her perception of feeling heavy. I wanted to know more about how she used that information to guide her training regime. I just feel bogged down. Not necessarily that I ate a whole pizza or something, not heavy in my stomach, just a feeling like a lead brick, to ride this bike I was pedaling in squares. It’s challenging to start a ride feeling like this, but I think it’s empowering too. For riding through that, it wasn’t necessarily pain – I’m not one to say push through pain – we push ourselves to know we are building each work-out on top of each other. When it’s soreness from muscles or the previous work-out, that’s different from pain of a crash or an injury that is still nagging the shoulder or something.

I wanted to know more about moments in Myra’s riding experiences that brought feelings through her body other than what she had described with pain and discomfort. I asked her if she felt moments of how she could tell if it was going to be a good or bad day on her bike. I don’t know how to describe it. It’s like 5:30 AM and I’m meeting a bunch of guys on my way to work. We’re riding 26 miles in the dark. You can’t tell if you’re going to run into a skunk or squirrel or something, but I just know it’s going to be a great day, because I’m on my bike. So, I see the sunrise, sometimes
the moon is out, It's just a sense of freedom. The other is camaraderie – riding with all of those people. I have learned to challenge my own personality – I like to sleep in – this makes me get out of bed. I get my workout in I know it’s good for me physically and mentally. So, it’s the stress level – riding the bike helps me with that. When I don’t ride I get really cranky – it’s not good for everyone that’s around me.

**Researcher reflection and analysis:** Myra’s bicycle as an object allows her mobility and freedom to move on her own, but is a tool that helps her connect socially to the other commuters with whom she rides every week day. Myra’s bicycle allows her to be part of her sporting community, which fulfills part of her social needs by allowing her to affirm her socially-shared embodied learning experiences (Simpson, Post & Tashman, 2014).

**Myra’s Second Interview**

**Connecting to Women Through the Bicycle**

When Myra and I met for our second interview, I could see that she had brought several items with her from her years of racing experiences. One of the items was a winter-weight thermal cycling jacket printed with the sponsor’s business name. I asked her what kinds of connections she felt to the other women with whom she had raced and trained throughout her cycling career through her jersey. Myra mentioned that her jersey brought back vivid memories of her teammates as well as the races she participated in during the height of her road racing career. Myra connected her memories to several other objects she brought to our meeting. She brought one of her old racing saddles, its edges covered with shiny black electrical tape. She explained that when she raced for her Trek Factory Team - a bicycling manufacturer-sponsored
semi-professional elite women’s team, that it had rained during so many of her races that her saddle had simply worn out from being constantly wet.

Not so much because of gender, I think it has crossed over to men as well. You know it comes down to personalities – you have those individuals who are in their own world – they are self-centered and so they don’t think about you. You know it wasn’t up to them to help that new rider. They were there to get their training or racing in, and to do their thing and leave and not care about that new rider – and there’s always new riders showing up. But it showed our dominance and promoted a feeling of unity in all of us.

She explained that her teammates often were disconnected from each other when she rode for the Trek Factory Team because of their competitiveness and need for individual recognition which produced a disembodied feeling from many of the other women on the team.

There were some prima donas on my team – you know when you ride at that level, you’re bound to have other good riders. They would often compete against each other. The good teams that I rode for had fewer riders – you know, two to four riders. When there were more than four, there were just too many cooks in the kitchen. There were personality dynamics that came into play. It’s nice to have lots of strong riders, but you also have to relinquish who is going to be the leader for that race – and if it changes during the race you have to go with it. There were some years when there were two conflicting riders and they just couldn’t let each other win, and they ended up racing against each other – and that was not a good thing – even though we had the strength and the dominance, it was our downfall.
Researcher reflection and analysis: Myra’s description of racing for a team whose members seemed not to embody interconnectedness and unity made me think back on my own racing experiences as a member of a team. To me, having up to 10 other teammates flying our team colors in a race made me feel proud to share a connection with other racers. It also instilled feelings of confidence, strength and unity in me when I imagined other racers seeing our team warming up together before the start of a race. To non-sponsored racers who rode unattached to a club or team, witnessing nearly a dozen riders riding together all riding the same equipment and wearing the same clothing must be daunting. But in reality, it was just as Myra had explained – when a team becomes too large, often there is no plan and we ended up racing against each other. Teammates often ended up chasing each other down at the end of a race for their own selfish personal gains. Most local racing teams that were really good had a few members that were hand selected by a promoter with a vision of good team dynamics which would result in winning races.

Symbolism through objects that connect to us such as sharing a common uniform is a form of embodiment. We learn to identify meaning through the realm of the body through our symbolic connections. This type of embodied learning interconnects with both the individual and to the world around them (Bengtsson, 2013).

Embodying Awareness of Others

Myra explained that when she was racing, she could see and hear things going on in the body language of other racers that served as signals to her.

I could anticipate what was going on. You could see it in their body language.

It’s just something that comes to your attention in a race. You are all embedded in the peloton, shoulder to shoulder, wheel to wheel, and I could just sense
energy in the riders. I could also feel through my body that I was feeling well. It’s like an out-of-body experience, I can sense that I am going to finish well, if not win the race. One race that I loved so much, I didn’t even win. I came in second because I led out my teammate. And I could sense everything that was happening around me, and I knew I just had to turn myself inside out to get her to the line. But I wasn’t sensing that I was even pedaling - I’m almost hitting the curb on every corner. But there was another rider just in front of me and I couldn’t pull her back.

Myra told me most of the racers she raced with were familiar to her. She mentioned that she had learned to read the body language of other riders and that they were able to read her body language too. I asked her to tell me more about how racers were able to read each other.

The field of women riders didn’t change much. We were all familiar faces to each other. I could just listen when someone was getting ready to sprint or attack – you could hear the clicking (of the gears) – some people are just so oblivious to that. You don’t need to see that an attack is coming – it’s the sound of the gears and the tires – you can hear it.

Myra explained that there were several factors that she and her fellow women racers felt about women’s racing that was distinctly different from the men’s racing scene. She told me that women racers were paid much less than men racers, and that the field of racers in women’s races was much smaller. Cycling promoters who often combined different women’s race categories into a single race – or merged them with the men, made them feel less important. As a result, Myra indicated that she was very appreciative to be part of an elite women’s team. She had been given three different very expensive carbon fiber bicycles during the time she spent with her Trek Factory Team. She returned the bikes when she left the team so that other women riders could use
them. Knowing that team sponsors often give away free equipment, I asked her why she returned her frames.

There’s a major disparity with women and men in amateur road racing. We were given very expensive thermal jackets which probably cost a couple hundred dollars each with our team uniforms. We were given very expensive carbon-framed bikes and they never asked us to return them. I wanted other women to be able to use my frame if they needed it. Those bikes can last forever. Trek was an international level sponsor and they chose 10 regional teams to give everything for free. Not only did we get a lot of sponsorship, but we had that unit of women as a family. We competed together and we had support from Trek, our sponsors. So, it’s material, but since most of us were working full time, having that support with the equipment was valuable.

Researcher reflection and analysis: Myra’s identity had changed as a result of her racing experiences. She learned as a member of a regionally recognized elite women’s team, that she and her teammates were like family. The shared valuable experiences together, often not through spoken language, but merely being together racing as a unified team. Myra and her teammates bonded together in adversity and success and embodied a spirit of team as a unique social collective entity (Simpson et al, 2014; Shipway et al, 2012; Brymer & Schweitzer, 2014).

Summary Analysis of Myra’s Interview

Myra’s cycling experiences brought changes to the way she organized her life and disciplined herself. She described herself as a distracted automobile driver. By riding her bicycle to work in order to avoid driving fines and the increased cost of insurance premiums, she was able to develop greater physical fitness and an awareness of the world around her. Cycling
brought changes to her eating habits and by training and racing on her bicycle, she experienced freedom and camaraderie through the connections she developed with other riders.

Myra was one of only two participants who had discussed the importance of being part of a team of riders. Curiously, Kara, the other woman interviewed for this research, was the only other person who mentioned that their perceptions had changed as a result of their experiences as part of a cycling team. Myra felt being part of an elite, all-women cycling team, sponsored by a world-renowned bicycle manufacturer gave her a feeling of dominance and unity through her bicycle. She mentioned that the other women “felt like family” to her. She was given very expensive equipment, and passed her equipment on to other women racers when she retired from the team even though it was hers to keep. This was a much different experience than when she was not a member of an elite team of women racers. For example, her races were often combined with other men’s races because there weren’t enough women to fill her race fields. Myra indicated women racers were routinely paid less for their race winnings. She said she felt less important when this happened, but that the experience of racing with men paid dividends in the end.

Myra learned to read the silent embodied gestures of other racers during her races. This knowledge was also accessed by other racers and gave them interconnectivity; a valuable strategy that allowed them to “read” races. Their experience gave them an advantage Myra acknowledged of which not all racers were aware. “I could just listen when someone was getting ready to sprint or attack – you could hear the clicking (of the gears) – some people are just so oblivious to that.” At racing speeds, embedded in a peloton with other men, Myra can sense the energy of other riders through their body language. She could read when an attack was coming through “the sound of the gears and the tires. You can hear it.” Myra was able to sense that she was going to finish well from this feeling of interconnectivity with other riders. “I could also feel through my
body that I was feeling well. It’s like an out-of-body experience. I can sense that I am going to finish well if not win the race.”
Kara is a 56-year old Caucasian yoga instructor. As a young child, she often rode her bicycle throughout the neighborhoods around her home. Although she had mostly forgotten about her bicycle until her mid-twenties, she began to ride again casually, once or twice yearly. It was on her 30th birthday that she connected with her bike in a more serious way after meeting a group of riders from a local bike shop at her gym.

**Playing Again**

Kara has been an athlete all of her adult life. She enjoys body-building, skiing, hiking, softball, volleyball and participated in local recreation league sports. She mentioned that she feels very connected in outdoor environments. When I asked her why she chose the sport of road cycling, she said she loves being outdoors and has always had something to keep her active and physically fit.

I really started road cycling when I met several guys who came to my local gym and belonged to the Green Mountain Team. They were all talking about cycling. And I was like oh, I will try that. They took me out on a ride and I just totally fell in love with it. It felt like play. And for the first time, I felt like I was playing outside again.

Kara’s bicycle helped her reconnect with play in an environment she loved. Her bicycle and the people whom she recently met in her gym helped her find play once again. She had a
passion for outlets that allowed her to explore her physical abilities in social settings. Kara was creating new networks with objects and people engaging in a sport set in outdoor landscapes.

**Researcher reflection and analysis:** Kara’s connection to the importance of finding play once again in her life speaks to how we often become isolated in the daily routine of our responsibilities in life. Whether it be school, work or raising a family, we somehow lose our connectivity to the freedom of spontaneity in our lives. When life is so structured and lacks spontaneity, it often seems as if the events of our life are playing out through a repetitive, programmed routine. Physical immersive practices like cycling which take people out of their daily routine can bring rich meaning and understanding to people by connecting them to the world around them through engaging the entirety of their bodies in sport (Simpson, Post & Tashman, 2014; Allen-Collinson & Owton, 2014; Brymer & Oades, 2009; Brymer & Gray, 2009; Spinney, 2006; Brey, 2000).

I asked Kara what was important about her newly formed social network with the guys she had met in the gym.

For me it was being in it together. I always liked the way Michael Jordan said it’s not about the game it’s about the locker room – like that camaraderie…being in it together – the war stories after the ride. It created a snowball effect. They waited for me, encouraged me and supported me. Soon they took me out to those Wednesday Night Training Races…I remember those Wednesday night rides. There was one girl in that field and she was just about to quit when I showed up. And both of our worlds changed. She was ready to stop riding ‘cause she was getting dropped all the time. As another woman, I’m sure my enthusiasm and my passion and the fact that I was so competitive helped her decide to keep riding. I wanted to know more about how her new social community supported her and helped her learn about racing and group rides.
When you have people there with you, and you have somebody that can push you and you can push them, the whole partnership of kind of being in it together. And I mean she really became a good friend – you know, outside of just riding. I invited her into some of my hiking things and we hung out at the beach together.

I took her snowboarding for the first time.

**Researcher reflection and analysis:** Kara’s affective feelings of camaraderie and her reference to being in it together make an important connection to adult Embodied Learning Theory. The way Kara constructs knowledge through her body in her cycling experiences supports the importance of recognizing the body as the first manner in which we access learning. Learning begins as we first encounter it through the intersubjective openness of our body (Merleau-Ponty, 2012). “Hence, reflection does not itself grasp its full meaning unless it refers to the unreflective fund of experience in which it presupposes, upon which it draws, and which constitutes for a kind of original past, a past which has never been present” (Merleau-Ponty, 1962, p. 242).

Furthermore, her experiences are often brought through a social context. Kara and her riding friends are presented with unique embodied learning opportunities as they race and train that otherwise may not be present without their bicycles. These valuable experiences are important not only to Kara’s identity, but to those with whom she shares her experiences.

**Feeling Alive**

I asked Kara what she had learned about herself as a result of her cycling experiences. I wanted to know if she had noticed any changes in herself or if cycling had made her aware of her identity.

When I did those Wednesday Night Training Races, we would start at 6 and we wouldn’t get done until 8 or 8:30. We would get home at 9 and I would go to bed and my whole body
would be vibrating. Like even still after eating and drinking enough, I would be just like… and it would be very difficult to sleep because I was just so hyped up and so – I worked out so hard, that I was just laying there and my legs just feeling alive – you know, not settling down.

I asked Kara to tell me more about her comment about feeling alive. I wanted to know if it was a good feeling or whether, because she was unable to sleep, it was a bad experience for her. Yeah, except I was trying to fall asleep. Yeah, so that sense of feeling alive? It’s very similar to when I do wheel here (an inverted yoga pose with only hands and feet touching the mat). Even though it’s a little bit different than opening up the front of your body, I like that suffering – I like that feeling – good suffering. Some people hate to feel effort. Like I want to feel like I put in a good effort and that I pushed myself.

I mentioned to Kara that some cyclists are able to gauge their level of fitness by pushing themselves to physical discomfort.

Yeah, for sure. And I think maybe that’s what (bike racing is) all about. And what I wonder is what and what that does and why we don’t just avoid that? Well some people do, but why do we not? I never felt like I had to win a bike race to feel good. If I worked hard and made something happen during a race, or I chased something down – it was just a feeling of being able to do that. How great that was…like oh my goodness, I got to get there. And I didn’t always race smart, but I always raced hard. When I got more experience, I raced a little smarter.

**Researcher reflection and analysis:** Kara had said that’s what it’s all about. I wondered what it was exactly; about the phenomenon of physically pushing oneself to the threshold of discomfort – even pain? A momentary investment that perhaps pays off later with a bigger dividend. Momentary discomfort that brings a feeling of accomplishment and perhaps recognition from other racers? So many of the successful bicycle racers that I have known have learned that pushing yourself physically to the point of feeling intense pain while racing puts you into a small group which will have a much higher probability for finishing well in their races. A formula for
success. Enduring pain produces humility and courage among athletes (Dutkiewicz, 2014; Simpson, Post & Tashman, 2014; Brymer & Schweitzer, 2012; Spinney, 2006). In a track racing event at the Lehigh County Velodrome back in the early ‘90’s, I vividly recall pushing myself so hard during a 3-kilometer time trial – just nine times around the track, that’s not too hard, right? In my final laps around the track my vision began to darken and tiny purple pulses of light began to appear. It began with my peripheral vision and eventually dominated my entire field of view. My body was shutting down. But I continued to push to the end of the race. Through the embodiment of pain and the courage, I gained great satisfaction knowing that I had given the entire sum of my totality of effort during that performance. It changed how I defined myself and helped build my confidence in other aspects of my life. Learning to suffer in sports has allowed me to make similar investments to hang in there when moments in life make me want to quit. I now had a story to remind myself and to tell others that resulted from that single experience. I also had a symbol to remember the event – The title of first place in the Master’s 3K Time Trial, and a gold medal in The Pennsylvania State Track Cycling Championships.

Kara mentioned that she felt safer when she rode in Masters level men’s races. I asked her to explain her comment as I wanted to know more about why she felt safer racing with men.

Even through the men’s fields were much larger, the racing was faster and I felt safer because they were smooth. In women’s races, they sometimes combine fields of different levels of riders because there are not enough of us. The men were all in one category and were experienced – when you flew through those corners – it’s being in that group and being part of that. You know, that interconnectedness of being part of that – you have to rely on them being safe for you to feel safe sometimes.
I asked Kara about when she first began racing as a cyclist. She told me several stories about racing as a citizen racer – a category of road racers unlicensed by USA Cycling, a promoter of amateur road races to which all licensed local racers belong. Her race stories centered around riding with her new friend she me on the Wednesday Night Training Races.

There were those WEEU races up in Reading – do you remember them? There were like 400 people in those races! Riding mountain bikes we mostly wanted to kick each others’ butts, but road racing we would work together a little more. I remember pulling Myra in one of those County Park Training Races – you know, set the pace for and like taking turns pulling. I remember not even knowing her – she was CAT 1 or 2 or something like that and at the time she was racing with the big girls. I think she was riding with the guys and got dropped, but I remember her staying on my wheel, and I said stay on my wheel, I will pull you as hard as I can for a lap – like I didn’t even know her.

I wondered if Kara, during her moments of hard effort during races, felt a connection to other riders that she did not feel when she was riding alone.

You feel aggressive, you feel strong, you get a little confidence when you’re hanging on back there. At moments, I was just so cocky then – just super-duper strong back then – for me. Yeah, that feeling of being able to push hard – you don’t even think about your bike then, you might think of the wheel in front of you – you’re not even thinking of your own bike, are you? I would just be staring at my stem and I wouldn’t even recognize anybody around me.

When I asked Kara to describe a bit more of the feelings she got during those hard efforts she offered that she experienced both good and bad suffering.
There’s good suffering when it hurts, but you can handle it and you’re fit enough to handle suffering. And then there’s suffering when you’re not going anywhere and you’re just dead. There is a difference. My legs feel like they were fried. My friend use to say my legs feel like fence posts (laughing). My pedals felt heavy and thick, like I was pedaling in squares instead of circles.

Kara spoke about moments when things were going well during a race. Her experiences were such that she seemed to not notice her bike.

If your bike is working well and you feel good, I didn’t even think about my bike. Everything is just flowing – there’s a flow there – everything is working right. It’s so beautiful when everyone’s on the same page and you’re sneaking around those corners in a race. It’s sort of like those birds that fly together that I have been noticing lately. I don’t know what kind they are, they just look like a big black thing. And they spread out a little bit and they come back together. I love that feeling of (making a hissing sound imitating lots of bikes together in movement) -that sound going around corners too! And when you stop pedaling you hear all those freewheels going around. Sometimes I have felt the most complete sense of joy… and I remember one time in particular. It was on a ride – I wasn’t even racing – it was such a beautiful morning, I just felt a sense of awe and joy of just being right there in that moment. Everything is just smooth when you’re pedaling in circles and you don’t even think about it. You can feel your breathing, you can feel your legs moving – it’s not effortless, but it’s smooth – it’s flowing and there’s no sticky points. Sometimes, I would think just lift your head up and look at that scene. Even though I was working hard, I would just look up and look around and see my environment. And there’s times when it’s not working right – where it’s just awkward. Yeah, you notice. One time I had
water in my wheels, and I was doing these corners, and I kept thinking I had a flat, because the water was moving through it and it was awful. So then of course, you think about it.

**Researcher reflection and analysis:** Kara’s descriptions of feeling in sync with her bike during races when she experienced a flowing feeling in her body and heard the sounds of the bicycles around her, helped her embody connectivity to those racers. It made me think of my own experiences with the same phenomena. It requires time and experience racing to get to a place when you are familiar enough with the sport that you start to relax and take in some of its affects - until you stop thinking about things and you just start to get into a groove – out of the brain and into the body. After a while, it seems to happen pretty quickly. You start out with a really hard effort – someone undoubtedly jumps from the start and there’s a chase and you’re gasping for air – but once you recover and get into a rhythm with the other riders and you’ve gone through 30 to 40 corners, you just start to settle in and your body seems to take over. There’s so much going on with everything around you, but you seem to operate internally through your body – it’s like a pre-programed sequence that just begins to happen by itself unfolding moment by moment.

**Racing to Train**

I asked Kara about the training program she uses to prepare for her races. Having raced for over 25 years, she is knowledgeable about how she best prepares for her racing schedule.

My world is I race to train, I don’t train to race. So, knowing that I’m going to race keeps me preparing for it. Cuz if I don’t have a race, I may skip a workout.

If I know I’m racing, I’m not skipping anything. But I don’t have to map my ride out every time. Some racers are more tech-savvy with - oh my gosh – everybody with their GPS and Map My Ride and Strava and stuff – I’m not into any of that!
I have a computer on my bike, but I wasn’t following a training regime where I needed to keep my heart rate up to here and stay up there… blah blah blah blah… I go for the more physical enjoyment by riding with others. It’s all about sensations for me. It’s about being in that moment and riding and feeling good, and even if I’m feeling bad, I’ll ride through that. If I’m not fit, and just not being consistent, riding and racing with guys helps because they’re so smooth and fast. I remember riding those Sunday rides. I remember being pushed. Someone would come up behind me and push me from behind – you know Myra and I would just keep getting dropped – I couldn’t feel my legs, they were just so blown out. Jim came up behind me and said - just go harder! How can you go harder when you’re at your anaerobic limit? You know, you can’t go even one-tenth of a mile faster – that’s when you’re praying for a stop sign.

**Kara’s Second Interview**

Kara brought several items to our second meeting. The first item was a bright orange cycling hat she called *swag* that came from her 2004 visit to the Tour De France. She indicated that Floyd Landis was on one of the teams (a local rider who became an internationally known, professional cyclist) and that she would never have gone if she had not been a cyclist.

It’s just such a spectacle. If you have any love of cycling, you have to see it at least once – it’s just so cool. Myra and I went over. I wanted to bring the polka dot one (cycling hat), but I couldn’t find it.

Kara also brought part of a cycling jersey from her first cycling team. She had fashioned a flag out of the jersey to wave during races to encourage her teammates while she was watching racers from other categories compete.
Many, many, good years with that team, you know – lifetime friends. I have so many good memories with that team. Those were my rock star days! You remember the camaraderie! It was such a grassroots thing and such a great way to get started. It brings back a lot of memories and I will always have an attachment to them.

**Researcher reflection and analysis:** The feelings of social connectedness to other riders through sharing the embodiment of joy and happiness - even through moments of the pain and suffering of physiological stress seem to form long-lasting bonds among cyclists. I think of seeing all of those Mud Runners crossing the finish line when I volunteered for ToughMudder races. As they crossed the finish line after completing a grueling 4-hour race facing more than 25 physically challenging obstacles along the course that requires cooperation and team work, runners exuded an interconnectedness resulting from their long journey of shared failures and accomplishments – being in it together.

At the height of Kara’s racing career, she raced with a women’s team called Alloy Nipples. She showed me her race number, number 686, that she had pinned to the racing jersey she wore that day. She indicated that it was the longest race she had done. As we sat together during the interview on the couch just inside the entrance of her yoga studio, her facial expressions seemed to indicate that she was reliving her memories of that race once again.

I did the Batonkill one year. It was 60 miles and part of it was in the dirt – it was horrible. I think of how much better I could have prepared for that race. It was total suffering. I was a CAT 3 and the CAT 4’s caught me and they didn’t let me ride with them – I rode 90% of that race by myself – it was pure suffering, I didn’t know what was going on.

Another race she participated in was a relay race called the 24 Hours of Canaan which took place in Davis, West Virginia. It was a women’s-only team race in which she and her team-
mates took turns racing for a 24-hour period of time. She showed me a black cloth messenger bag from the race embroidered with the name of the race and the first-place designation she and her teammates won.

We got to the race and there were professional women there. And we were housed with all of these pros and we were just goofballs. We made our own team name – Alloy Nipples – that actually came from Sandy’s husband – so we got some celebrity status to be honest because of our team name. There were 12 teams and Sandy and I thought we were gonna puke. The pro girls had all of their little protein drinks and all their stuff set up so neatly and their helpers and we had nothing – nothing. But one of their girls got sick and had to pull out, so we got first place. We just had a really steady team, you know – no mechanicals. But we didn’t sleep, you know you would lay down, but your body would be….in a couple hours you would have to just start getting ready to ride again. I remember everything about that race.

**Changing Through Injury**

Kara indicated that currently, after years of injury to her body, she struggles to keep up with other riders on her bike. A great deal of the riding she does is alone. Riding alone she can set her own pace and doesn’t have to worry about anything else.

I do the spin bike (an indoor, stationary bicycle trainer) because of my shoulder. Even riding on the road bothers me. So, on the spin bike I keep my own pace, and I can get that same thing sometimes. I can get into that rhythm and just go and not worry about anything else – that feels really good so I can do that by myself.
Kara told me that the woman she met at her first Wednesday Training Ride, who became her best friend over the years, had left racing because she was raising a family. Her friend’s disappearance from the cycling scene was one of the reasons Kara’s own racing began to take a back seat to other things in her life.

Kara explained that as she gets older, recovery from the injuries she sustains racing takes longer for the healing process.

Yeah, falling down is the same, but the recovery is harder. And as a competitor, now that I’m older, I just hang on in races, but it’s got to the point that it was all work. If I’m coming back from an injury or something, I was just trying to get the job done – and there wasn’t any enjoyment in it anymore. I was hanging on for dear life – I just didn’t have the legs to stay up with those women anymore.

Sometimes now, I just ride by myself to think. It’s like your own meditation in a way – just trying to work things out. And because I have to ride during the day when other people are working, it’s a little harder sometimes. But they both serve their purpose. It’s so much easier if you’re going to meet someone for a ride, I mean I’m very social – I do want to gather my friends and ride hard sometimes, even if I’m not racing. I like the feeling of breathing hard and pushing myself like a racer. It’s like you’re going really fast, but you might not be. Sometimes I just go out and ride nice, and I have to now.

Kara suggested I interview Tom, another local racer. It almost seemed that since she had been somewhat disconnected from her road racing, that she wanted to give me a reference for getting better data. She proceeded to tell me about Tom.

I wish you would interview Tom, who’s the crazy guy. You know who he is, right? He suffers more than anyone I know. You know sometimes he can barely walk. When he gets on his bike he just suffers and suffers and suffers. I still have
to feel physical in my life – I’ve been physical all of my life – you know I think it’s an outlet to different dramas and traumas of growing up. And I think athletics has been my savior, and I’ve just found things to continue that. We forget to play a lot of times. Everything is so serious especially when you’re raising kids.

Everything is so serious…and important.

**Researcher reflection and analysis:** Kara was enjoying play once again in her life after rediscovering her bicycle – being in the moment by experiencing physical challenges in nature. Although she previously perceived parenting and job responsibilities to be more important roles of adulthood, the motion, rhythm and harmony of riding her bicycle made her feel alive again. Had she been comparing her life to what others perceived to be important roles of an adult? In Merleau-Ponty’s philosophy of how the human body engages uniquely with our own perceptions in the world brought through our own unique experiences, he clearly indicates that we cannot compare our lives to someone else’s expectations or experiences.

Kara’s cycling experiences and social connections not only define much of who she is, but also ground her experiences moving forward both on or off of her bicycle. This type of learning – learning through the body with objects, like Kara’s bicycle set in the context of an outdoor environment - can bring learners moments of great relevance and meaning and help to shape their individual and social perspectives (Olsen, 2010; Dant, 2004).

**Summary Analysis of Myra’s Interview**

Kara found that through rediscovering her bicycle in adulthood that she learned to experience a complete sense of joy, spontaneity, and freedom in her life once again that she calls play. Racing her bicycle allows her access to experience being in the moment and in being interconnected with the beauty of the landscapes where she rides. Her bicycle has also been a
vehicle through which she has made valuable friendships and has learned to feel good physically.

“I race to train, not the other way around.” In other words, one of Kara’s goals is to experience good health through physical fitness, so she sets goals to race so that she will be fit for her races. Kara relies on the friendships she has made through her cycling network for support.

“It’s about being in it together.” She paraphrased Michael Jordan during our interview “it’s not about the game, it’s about the locker room.” In other words, it was the camaraderie she experienced with the people she rode with that was important to her. Kara alluded to her “war stories” after her races. Her bonding to other riders began with after-race stories deconstructing the events of the race which led to a “snowball effect” in strengthening the relationship. “They waited for me, encouraged me, and supported me.” In the same manner, when one of Kara’s closest friends left racing to raise a family, she felt disconnected resulting in her racing “taking a back seat.” Myra’s connection to her teammates at the height of her racing career, which she refers to as her “rock star years,” resulted in life-long friendships.

Kara, like Myra, shared stories of racing with her teammates that stood out as important events in their lives. Kara explained that one of her races was 60 miles in length and “was total suffering.” Another race situated in the mountains of West Virginia had her and her teammates competing with professional-level women’s teams. After her races, Kara explained that she couldn’t sleep because her “legs were vibrating”. “My legs felt so alive” when I pushed myself that hard. “It was good suffering”. She felt strong, confident and aggressive during the height of her racing career, but repeated injuries she suffered through a lifetime of physical activity eventually caused her to slow down.
Having begun his professional life after graduating high school, Jason, at age 26, drove a grain truck and had a pack-a-day cigarette habit. Jason was introduced to the sport of cycling by his soon-to-be father-in-law. He explained to me that although he had ridden mountain bikes as a child, he had never attempted to ride a road bike before but felt at least trying might lead to a good relationship with the father of the women he wished to marry. He offered his perceptions of his first road bike ride:

I mean it was just weird - it looked weird - everybody had spandex on, and it just didn’t jive with me, but that’s what he (his future father-in-law) did. I was desperate to show him that I do love your daughter, and I’m willing to do anything short of killing myself. I remember the ride vividly – an 18-mile ride called the sticky bun ride. It went towards the river where it’s really hilly. It was terrible. It was like within mile three I was done. I just wanted to get off the bike and call a cab. But he was super encouraging, and he really enjoyed seeing the impact he was making in me. He knew that this could be a good stepping stone to kind of make some changes in what’s going on in my life. He didn’t drop me, he didn’t leave me, he rode behind me and was kind of pushing me through it. For me it was that experience, that first ride. It absolutely changed me and I wanted to get healthy. It wasn’t long after that I kicked my bad habit of smoking because I just wanted to continue to ride. There are very few people who can balance a good habit with a bad one.
Researcher reflection and analysis: Jason’s Haiku is testament to how his bike changed him. Through his experiences with his bicycle, he can freely travel and see new things with “endless possibility”. His bicycle, as an object brings, relevancy and meaning to his life (Olsen, 2010). Simpson (2006) posits that objects used by athletes in the natural spaces where their sport unfolds bring them meaning in their lives.

Changing Horses

As Jason started to ride his bike more regularly, it made him think about his eating habits and his overall well-being. He mentioned riding also helps him feel better mentally.

Yeah, health that cycling brings to I think almost anyone who rides a bike.

My mental health was getting better – that well-being that cycling brings to I think almost anyone who rides a bike. I was eating better and getting healthy on all spectrums – for sure.

Jason is now 32 years old and owns and operates a local bicycle shop. A wall beside a bar-height silver table in his shop prominently displays five canvas photos arranged in a circle. One photo is of Jason with his bike wearing his team racing kit (uniform). The other photos are of his family - his father on his bike, and his wife and children on their bikes. To the left of the photos lie two large, framed displays of the Pennsylvania BAR jerseys and the medals Jason won. For two consecutive years, Jason has held the title of being the winningest rider in his racing category in the state of Pennsylvania. One of Jason’s ideas for starting a bike shop was to connect other people with his passion for cycling.

Jason’s bike shop is a gathering place for bicycle enthusiasts of all types: mountain bikers, roadies, cross racers (a cycle sport that combines mountain bike racing and road racing...
with a uniquely designed bike) and leisure riders. The coffee is free and one of his customers often drops off pastries for customers at no charge. Jason’s goal is to promote cycling culture and connect people who share a passion for riding.

I just want people to have a place to congregate and to help people meet for a place to start their group (bike) rides. It’s tough at times, if you are new into cycling, I don’t think outside of like Lancaster Bicycle Club there’s not a website or helpline to call – hey where can I meet fellow cyclists? It’s just like here we are, cyclists talking outside of the bike shop, outside of...we don’t have our bikes here…it correlates to a lot of things. So, you’ll be helping these people you met through cycling in every walk of their lives for probably the rest of your life. So, the relationship side of things is really cool – good relationships.

**The Rider-Mechanic**

As the primary bicycle mechanic of his bike shop, Jason is definitely a numbers-guy when it comes to the rider and their bicycle. When I asked him about how long it took to become familiar with his road bike, his answers revealed that technology was very important to his practice of building and repairing bicycles.

Yeah, I would say that I don’t know when that transition happens for cyclists, but at some point, you know, the connection between the rider and bike becomes more intimate. It becomes – this is my bike and I’m gonna name my bike – you know, stuff like that. I can tell when someone really loves their bike when they bring it into the shop because it’s well maintained – it’s clean. So yeah, there’s a time when that transition happens where you’re not so much aware of being on it, you just kind of like become one with it when you’re on it. Especially where we
live where we get into roads where you can just get lost – you don’t even think about it, it’s just what you do.

When I asked Jason to describe more about how his bike grew to feel more like it was part of him he offered a perspective that revealed more about his trade as a mechanic.

I mean rolling resistance, geometry, everything about road bikes speak of speed – when you compare a road bike with a mountain bike, it’s almost like a top-fuel dragster compared to a car. One of them is extremely fast and the other one is built to last and go over terrain like logs and trails and stuff. Mountain bikes were typically the first bike we got as kids because you are going to be riding in the grass and up the road to the penny candy store. But my road bike is like night and day. There’s a reason it’s called a road bike – efficiency, power transfer – all of that – whether you’re on steel, aluminum or carbon, it’s all much better than being on a mountain bike.

Jason told me more about his own bike, and I could quickly tell that he was very knowledgeable about many of the newest innovations in road bicycle industry brought through research and technology.

I work in the bicycle industry now and owning a bike shop – we’re at the forefront now. It’s colossal technology and how smart everyone is with R&D (research and development) stuff. I’m not sure where this pinnacle versus collapse is going to come in, because we are at such a high level. When you look at the performance side of cycling, I see professional sprinters leaning totally over the bars. The aerodynamics of (names a professional tour sprinter) his sprint shows 20% less drag than a traditional sprinter like (names a pro sprinter with a traditional sprinting form). It’s crazy to think how much time, effort and money
are put into technology whether it’s the bikes, cranks, pedals – all this stuff. My first road bike was a Scott triple-crank 7-speed rear cassette with an aluminum frame and fork. When I got a Cannondale CAAD 8 with a carbon fork, I thought wow! What a difference maker.

Jason described in detail the feeling he felt on his bike moving from aluminum to carbon.

So, the carbon fork dampened everything. If you’re racing in a crit, you would notice –sometimes crits have bumpy corners – you would notice how the bike handles. On longer bike rides the absorption of energy through the fork makes your hands feel better after 80 miles. That’s the biggest thing I would feel. And now I’m racing on an Argon Nitrogen Pro Frame. So, it transfers power and feels more comfortable than my Cannondale. It’s crazy that they can make something more stiff and comfortable at the same time – it doesn’t make sense. But on the performance side, numbers don’t lie. So, when I get out of the saddle to sprint, it transfers 6-700 watts very efficiently.

Jason’s description of his bike continued based on his experience as a mechanic who relies on technology. He mentioned that some riders may not notice the little mechanical things that he does.

Being a bicycle mechanic you just kind of always check things. You have a check and balance sheet and you always run through that. Other riders who don’t work on their own bike take a lot of that mental thing and just switch it off – as a mechanic he knows what he’s doing – he’s not going to screw up my bike.

Jason continued to describe his bike through the other parts that work together with his frame.
So, tying your wheels into that frame. There’s a lot of areas where that transfer of energy can be lost. Maybe there’s a wheel rub because it’s (the bicycle frame) flexing that much, or the rear stay is flexing. Anytime you have a brake rub or drag, that’s winning or losing a race. For me it’s even worse because I build the bikes. I build them from the ground up, so when something’s not right, I know it’s not right. And it goes back to being one with the bike. If you’re that way and you know how it should be, you’ll know.

Researcher reflection and analysis: Jason’s perspective of being one with the bike was a similar feeling that I had when I rode and things seemed to be working well mechanically – the bike just seemed to become part of you. The moving parts of Jason’s bicycle were not just mere objects in his experience, but were interconnected to him as he raced. As Dant (2004) argues, “affordances” (such as Jason’s experience of being one with his bicycle) are fused to our human experiences (p. 74). But Jason’s experience may be, in part, related to his practice as a bicycle mechanic. His experiences are grounded in his technical and mechanical knowledge of bicycle building and repair as well as his passion for fine details – a very different perspective of being one with the bike than my own.

Jason’s Second Interview

Racing Enhanced Me

During our second meeting together, we met early in the morning at his shop before any customers arrived. I helped Jason move some cruiser bikes out to the sidewalk in front of his shop. Afterward, Jason made a pot of fresh coffee and we then both sat at his high-top silver table with the bar-height stools. I wanted to know more about his
experiences as an amateur bike racer. Since many of the younger racers in the area regularly record their won races with small cameras attached to their helmets or handle bars, he offered to share several videos of his racing he had posted on the web.

Jason had quickly developed excellent racing skills and accumulated the necessary points winning or finishing well in his races to move from a beginner to a regionally recognized Cat 2 racer. As we watched eight or more of his races together, he explained things like the weather, how he was feeling near the finish of races or how he had employed a winning strategy by cooperating with other racers. Several of the videos showed him gasping for air in obvious discomfort as he crossed the finish line. I asked him if racing changed him in any way.

I don’t know that it’s changed me – it’s enhanced me. Growing up as a soccer player only took me so far. I could have played soccer collegiately, but I decided not to go to college and just start going into the workforce. I’m cycling at a high level now because cycling has molded me into the person I am right now. It’s taken a lot of doubts that I had about what I could have done and to just embrace what I am doing now and what’s going to happen next, or…the possibilities are endless. And age is not an issue with cycling. We continue to get better with time like (he mentioned the name of a very successful 70-year old racer who still races his bicycle).

Jason also mentioned that his health had improved as a result of cycling. He had quit smoking and was eating more nutritiously.

But it hasn’t flipped everything in my life upside down, but when you find some success in racing or you’re really good at what you do, it definitely transfers across the board for whatever you’re doing in your life. Your confidence is boosted and that’s great for us in the shop because people come in and say well
what do you ride Jason? I see you had another really great weekend – you won Grandview! And there’s a fine line. So, I’m usually pretty humble. But it really boils down to putting that work in. After your (working) hours when you’re clocked-out, when are you gonna find time to put those miles in? And having a support system helps to.

Jason’s support system involved not only changing his job from driving a grain truck to owning/operating a bike shop, but included his family and the people with whom he rode and trained. In his mind, there were often very little differences in natural talent among bike racers. Making time to train and having a support system that allowed him to spend time on his bike were central to his success as a racer.

When I was a truck driver, I was coming home after working 10-12 hour days. I was loading and unloading those trucks. So, I would come home totally spent – just whipped. And somehow, I found time to ride. And so, I was riding – putting in the miles, but it didn’t matter. Nothing increased on my bike – my power and fitness didn’t increase – I was draining a tank that was already empty. But basically, now that the shop has opened, it’s a different kind of work, and the stress isn’t there as well. Since I’m not doing all of that physical labor, I can go for an evening ride and there’s a huge difference. You gotta have that support at home too. My wife (laughing) - it starts with her. My kids don’t know any different, they’re five, three and two (years).

Jason’s success racing his bicycle opened opportunities for him to share his knowledge with other riders and extends outside the sport of road racing. He credits his support system – his family and the knowledge that has been passed down to him through the peloton.
When I am able to train during the evenings on my indoor trainer it makes a huge difference. My kids are with me and I don’t have to leave them. For four years it was rough. I was riding for other riders like a *domestique* – they had much more fitness than me. So being a good teammate, putting that person into…for years I would say Aaron or Ben, I’m here for you…I’m here to work for you because I just don’t have it, but I think you do. But now, circling back, to using that support system from my wife saying like – hey get on the trainer – just do it. Cuz there’s a lot of nights you don’t have …Oh, I’ll do it tomorrow, or…you can’t. You can’t skip days. Cuz there’s a lot of other guys out there who aren’t skipping days.

I asked Jason to tell me about how he trains for his races and how he is able to gauge his improvements toward reaching his goals. Although he is driven to a great extent by the feedback from his technological devices that display his cadence, heart rate, power and speed, the data mostly confirms what he is experiencing in his body.

In the first 10 miles of a ride, if you are feeling bad, you’ll know through your legs. They call them junky legs or heavy legs – there’s a couple different words we use for them, but you know pretty quickly what happened the days before. But that doesn’t matter in a race. If your legs don’t feel good, you have to flip the switch off in your head and you’re just going to do it…you’re going to suffer. It’s easier today because you can gauge it with your computer. You have a heart rate monitor. You have a cadence sensor. You have a power meter. These all relay perfect data. So, if you’ve done any FTP (functional threshold power) work on a power meter, you know where you are in that breakaway. I know my limits, and if I’m in that window, we’re good, let’s keep going and full gas! But I look at my devices because I say I should be recovering now – so I want some confirmation
on what I am feeling. But you also want to know is there more? Can I take one more big pull here and then take a breather to set up for the sprint?

Our discussion shifted to how Jason communicates with other riders when he is in a breakaway. I wanted to know how he knew that a breakaway was working successfully or not. Knowing there usually is not a lot of talking when riders are making such sustained physical efforts, I asked him how he was able to tell the break would last or not.

Usually there’s two types of communication in a break. One of those is going to be totally silent, and it’s going to be the code of the breakaway. So that means everybody is working together, and we’re taking fair pulls. Everyone knows when the flick of the elbow comes to make that move up ahead. And then the communication when the break is not working together. Here comes the voice. Here come the gestures of “come on dude, take your turn…don’t sit here.”

Tempers flare. People are much more vocal when that break’s not working, than when it is. When it’s going, it’s going. You don’t see much more than just that elbow coming and people breathing, that’s it.

What Jason had mentioned about learning the code of silence intrigued me, so I asked him to explain more to me about it.

It all stems from riding with people with experience. And they were riding with other people who were experienced. So that’s part of my due diligence to pass that on to the next generation. Just as I learned from Mark and Ben, and they learned from Rory - it’s something that you can’t teach, you experience and you learn and you watch. It’s not just knowing the conduct in a breakaway, you have to know to orchestrate and how to handle things, and what’s expected of you in a break – because there are expectations.
Researcher reflection and analysis: Jason told me more about the unspoken code of silence in a breakaway. Much of what he told me reminded me of how important body movements and gestures are to communication in bicycle racing. As a racer, you learn to watch and listen for signals of change, whether it be riders getting ready to accelerate, sounds of danger such as bikes or wheels touching, or even riders intentionally slowing the pace of the peloton to allow one of their team mates to escape off of the front of the group of riders. And you can see the collective result of those changes in other riders.

The peloton is fluid and dynamic: evolving moment by moment as a collective entity in its own.

So, if you’re in a break, there’s a reason you made that move to get up there. And it’s telling everyone you’re committed to getting away from the rest of the peloton. If you didn’t make that move, you have no business being up there. So, outside of the chess game of cycling, which is – you know, if you’re coming into a points-race or possibly a stage in a tour, where you’re playing a defensive pawn or sending people up the road just to break things up - if you’re up there, you’re there to work.

Jason explained more about the non-verbal communication he experiences during a break-away. Alliances form as trust between riders develop as a result of their cooperative efforts in their collective attempt to make the break successful.

Maybe you have some people in the break you trust, and you’ll communicate to them “hey get on my wheel” – and that’s not going to be talk, it going to be mostly a flick on the hip or a tap on the back. And that’s an indication of “I’m getting ready to go – come with me. Other times it could be a look or a nod, or …there’s a lot of different ways – people get it. If you see it, you’re like – this guy’s getting ready to go, get on his wheel – this is the move.
**Researcher reflection and analysis:** The move. So many races have the move. Racers or groups of racers try often to get away from the peloton during a race. It’s a way to work together with riders who have winning on their mind and maximize your own possibility of winning. The break moves faster than the peloton until it begins to fail for some reason. Spectators and racers often know the move when they see it; it could be a group of familiar talented racers that form an alliance, or an opportunity that presents itself to a group of racers situated at the right place when the peloton slows for a moment to take a collective breath. Often it may begin with a single rider who takes a huge effort to separate himself from the peloton. Other strong riders will often try to bridge to that rider, giving the break better success in establishing itself.

I asked Jason again how he learned all of what he told me, and as he had previously indicated, this unique learning does not happen in the classroom.

No, I don’t think they have a Breakaway 101 course. (mutual laughter).

**Passing the Baton**

For Jason, the road bike that his father-in-law introduced to him changed his perspective in several ways. He lives a healthier lifestyle by eating better quality foods and exercising regularly. It also introduced him to a unique culture that he identifies with both on and off of his bicycle.

The road seems so cool. I mean I love that scene. Cuz you open up your garage and grab your bike and the possibilities are endless. You can meet anyone – anywhere. I mean it’s cool – and everyone’s… it just translates. It almost like you’re still on your bike. Cuz when you pass a cyclist (in your car) you don’t give them four feet – you give them eight. You’re all the way on the other
shoulder. And if you see someone with a flat (tire), you put your window down and ask them if they are all right – do you need a ride? It’s kind of this thing when you get into road cycling – you become one. You embrace that. It goes forward into everything that you do. You just see things differently.

Jason told me about some of the other changes that happened in his life as a result of learning to ride a road bicycle such as his desire to share the benefits he gained from road cycling with others.

It’s a network. We’re slow in Lancaster to change, so you see some bike lanes going into the city, and you see some promotion of like “hey, ride to work. Put your car in the garage – you only live 10 minutes down the road. Hopefully that continues to change, and I mean it’s tough to … I mean major cities are onto it – even Philadelphia is promoting cycling in a great way.

Jason mentioned that some racers try to intentionally intimidate other riders who are just entering the sport. I asked him to describe the culture of riders who seem to be very unfriendly.

It’s split. It’s like Harley’s and Kawasaki’s. They really don’t wave to each other. It’s like this arrogance because – yeah, I’ve made it. And I see it off the bike as well. What have you made? I mean you’re still racing amateur, I haven’t seen you on the Tour (De France). At the end of the day we’re all on bikes! And isn’t that a common bond? They’re elitists for sure. And maybe that comes with some success. Maybe they won a state championship or an individual time trial or something that has some significance. But I think you’re still going to work on Monday to pay for your habit – really! (mutual laughter).

The intimidation factor of roadies often presents itself on the start line of a race. I asked Jason about what it’s like to be on the start line just as a race is about to begin.
When you pull up on the line, everything changes. You can be talking to someone and when you get up to the line it’s like - “What happened to Jason?” He’s stone cold. It’s like you flip a switch in your persona to get that done. I’m not lining up to intimidate people – it’s going to be what you did the week before on the bike – it’s not going to be a facial expression, it’s going to be your legs. That’s intimidating. When a guy single-handedly wins a race 45-seconds ahead of 30 other people that can’t bring him back, that’s intimidating. There are a lot of emotions on the line at the beginning of a race: anxiety, anticipation, fear, discouragement, confidence – and trying to juggle all of those. There’s a lot of things that run through a racer’s head.

Jason indicated that although there are riders who are unfriendly, his perspective is that road riders need to encourage new riders in order to spread the positive benefits of the sport and its culture.

The sport of road cycling is kind of dying. There are less guys and less promoters. How can we carry on such a life-changing sport? If you could plug in cycling into anyone’s life – we hear so many stories of how it’s changed people – type II diabetes, smoking, someone who had cancer and it was just an outlet for them to express how they were feeling – like their mom had cancer and they just didn’t know how to deal with that. Cycling translates and can be plugged into almost any situation and can help resolve almost anything – even up to pollution. World pollution, mental and physical health – it checks so many boxes and people don’t realize that when you look at the longevity of it – on the back end – you’re not having your knees replaced from running, it’s such a low-impact sport that you can go into your ‘90’s and still be extremely fit. And for me I don’t care what it looks like – you could be on a unicycle. If you’re gonna ride and be part
of that change, we’re down for that! I think racers need to encourage that. Get out
and ride, because that’s the first step. You don’t know what it’s going to look like
next.

**Researcher reflection and analysis:** Jason’s thoughts on his desire to promote cycling
made me reflect on something he had mentioned earlier in our conversation together. Old
guys teaching new guys – passing the torch. He had referred to a 70-year old rider that
inspired several riders as fine wine – it just gets better! He also mentioned that learning
how to race his bicycle had not taken place in a classroom – there is no Breakaway 101
course.

The knowledge Jason gained in successfully learning to race his bicycle came to
him through the entirety of his body in connection with his failures and successes in
racing. His learning had been the result of his holistic experiences set in the context
where his learning successes and failures unfolded through space and time and had been
honored through his feelings, emotions and affective abilities to be a much more
meaningful kind of learning than if brought to him only through his cognitive abilities
(Freiler, 2008; Merriam & Bierema, 2014; Swartz, 2011).

**Summary Analysis of Jason’s Interview**

Jason’s identity changed as a result of his bicycle racing experiences. His Haiku poem
that begins this Chapter is testament to the way through his bicycle he experiences “joy and
possibility.” Jason experienced freedom and autonomy on his bicycle by being able to ride
wherever he wanted which he describes in his interview as an “endless possibility.” He developed
confidence as a result of his race winnings that transferred to his professional practice of owner-
operator-mechanic of his bicycle shop. Racing a bicycle caused him to change his eating habits,
was the primary reason he stopped smoking cigarettes and resulted in improvements to his mental health. “Mental health through physical health – that well-being that cycling brings to almost anyone who rides a bike.” Jason added: “cycling molded me into who I am currently.”

Jason personally identifies as a “numbers guy” in regards to his bicycle. Part of his love of bicycling relates to his love of mechanics and his ability to use technology to improve his bicycle’s performance. He experiences these effects through his body while he is racing: increased speed by lowering his bike’s rolling resistance, efficient energy transfer through the stiffness of his frame’s geometry and material composition, as well as all of the gadgets that constantly provide him with feedback about his body’s performance. The data he gathers from the technology he utilizes confirms, however, what he already knows from his body. Jason has learned to recognize his bodily limitations during races and tries to “flip off the switch in my head” through his technological gadgets. “You’re gonna suffer, so if I’m in that window (functional threshold power level) we’re good, let’s keep going and full gas!” Jason has also learned how to communicate with other racers through what he describes as “the code of silence.”

Jason describes a successful breakaway as silent. Through reading body gestures of other riders, Jason knows if the break is working well or not. “So that means everybody is working together and we’re taking fair pulls. Everyone knows when the flick of the elbow comes to make that move up ahead.” Jason explained that with experience, racers learn the value of being attuned to bodily expressions racers convey through their movements during their races. Alliances form between riders who trust one another through their collective efforts in cooperation to win races. He explained that the silent code of learning is passed on to new riders not through a Breakaway 101 course situated in a classroom, but from riding with racers who have had these experiences. Racers must learn how to conduct themselves, what is expected of them, and how to cooperate with other racers. They must be able to orchestrate and handle the dynamics of a changing
moving mass of riders almost entirely by listening to the silent language of other racers’ body movements and gestures.

The final part of this dissertation is presented next, in Part Three. The section contains two chapters that begins with a brief review of the purpose of this study.
PART THREE

SUMMARY OF FINDINGS: SYMBIOTIC NETWORKS IN MOTION

The intent of this study was to focus on how adults learn informally through engaging with their bicycles set in the social context of the sport of amateur bicycle road racing, and to explore how this learning has shaped their individual and social identities. Among the goals in the analysis of the stories that resulted from participant interviews was to understand how athletes make meaning and relevancy in their lives through their embodied experiences as they intersect with objects used in the sport of bicycle racing and with other racers. From a personal perspective, the opportunity to conduct this research was greatly rewarding and profoundly meaningful. Beginning with the initial background investigation of existing literature to conducting participant interviews and uncovering the meaning other cyclists have made in their lives through riding their bicycles, I have also learned a great deal about myself throughout this journey. The opening story in the prologue of the introduction chapter of this dissertation was a personal reflection of one of my many road racing experiences. Little did I know at the time I wrote that story, that so many of my embodied learning experiences would be shared among the cyclists whose stories I had the privilege to see, hear and re-live. The narratives of my participants and my own experiences in road racing illustrate the importance of how the corporeality of the human body engages in meaningful learning through movement of sport.

Part Three of this dissertation focuses on relating the details collected through the interview process to the literature reviewed for this research and to the theoretical framework I used for the purpose of this project. Chapter Eleven of Part Three begins by identifying the significant findings that resulted from the analysis of the narratives from conducting the research interviews. Secondly, a discussion will be offered relating the findings of this research to adult
education as they relate to Embodied Learning Theory, Actor Network Theory, and to the philosophies of Merleau-Ponty and Eugene Gendlin. Thirdly, in Chapter Twelve, I offer a discussion that relates the significant findings of this project to the future practices in adult education, and recommendations for future research. Finally, I offer my closing thoughts through a brief personal reflection of this project.
CHAPTER ELEVEN: DISCUSSION OF RESEARCH FINDINGS

Learning in motion
Connecting to others, in
Sharing for meaning

The poem that begins this chapter creates an opportunity for readers to consider how engaging the body in motor-learning is a pathway to promote meaningful shared learning experiences. As motor learning is an important aspect of how people engage in learning, the purpose of this study was to examine how adults informally learn through engaging with their bicycles in the sport of amateur road racing, and to understand how this learning has shaped their individual and social identities. The research questions that guided this study were threefold. First, how does the sport of amateur bicycle racing shape participants’ individual and social identities? Second, what role does the bicycle play in cyclists’ meaning-making through their embodied learning experiences? Third, how do participants describe the ways the sport of cycling has helped them build their social networks? As a result of the analysis of the data collected through participant interviews and of my autoethnography, three significant interrelated themes emerged that relate the findings of this research to how adults learn informally through engaging with their bicycles in the sport of amateur road racing, that are the focus of this chapter.

This chapter presents a cross-analysis of the narratives of Paul, Chad, Rory, Myra, Kara and Jason, as well as my autoethnography. This chapter summarizes these inter-related themes across the narratives of all participants—namely: the role of networks in changing identity; the relationship with the co-present/other bicycle; and self-imposed pain and suffering. A discussion of the literature that intersects with these themes is offered concurrently using the theoretical frameworks of Actor Network Theory, Embodied Learning Theory and the philosophies of Merleau-Ponty and Gendlin.
The Role of Networks in Changing Identity

The first theme of findings centers on the role of networks in the embodied learning of road racing and the relationship between the rider and the bicycle, and the rider and other racers which results in changes to their identities. Fenwick and Edwards (2010) in discussing the relationship of objects to the networks where they are found in adult learning, argue they facilitate change that results from their interconnectedness to other actors in those networks:

Things persuade, coerce, seduce, resist, and compromise each other as they come together. They may connect with other things in ways that lock them into a particular collective, or they may pretend to connect, partially connect, or feel disconnected and excluded even when they are connected (p. 2).

The bicycle is not only part of how cyclists’ make meaning of their unique experiences in road racing, it is part of the fabric which connects other racers and objects used in the sport. The interconnectedness of the rider-bicycle-network also brings changes to racers’ co-constructed social experiences. As an illustration of how the bicycle is an important manner for athletes to make connections to other aspects of the networks where athletes learn, I offer two examples that emerged from the findings of this study in order to set the context of how objects influence both individual and social aspects of embodied learning.

Rory, while he began pedaling the base of the one-kilometer long ascent up Turkey Hill each morning on his way to work, explained that he felt every part of his ascent through his body while riding his bicycle. His familiarity with climbing this hill each morning for more than 35 years linked him, through his bicycle to his bodily sensations and to the exact spots on the climb where he would experience shortness of breath, fatigue in his leg muscles and the knowledge that there was much more to come. In essence, his body and his bicycle are linked together in a back and forth silent dialogue set in time with the hill and the rich textures of the wooded landscape.
that surround him on his daily ride along the Susquehanna River (Merleau-Ponty, 1962). Rory’s link to his embodied experiences through his bicycle is an important consideration to how objects shape and bring relevancy to adult learning. A second example of how the bicycle as an object not only facilitates meaning-making in adult learning, but also creates new opportunities that lead to changes in cyclists’ individual and social identities can be seen in the strong bonds Myra and Kara developed with their teammates that had resulted from sharing moments of pain and physically demanding efforts while racing their bicycles.

During Myra and Kara’s interviews, both participants used the term camaraderie to describe how, through racing their bicycles, they had changed as individuals and through their shared experiences as teammates working together to achieve the common goal of winning their races. In discussing their racing experiences, both Myra and Kara made mention of how their bicycles facilitated their embodied feelings that otherwise, would not have occurred or would not have been experienced in their bodies without their bicycles. Their bicycles then, were regarded as objects that not only had shaped and integrated their learning experiences but ultimately, fostered permanent changes to their individual and social identities. Kara indicated that “my world had changed” as a result of the life-long friendships she made racing her bicycle. The unique places where their racing experiences unfolded were also important in shaping their individual and social identities. Kara and Myra experienced these changes in their identities situated in outdoor, natural environments. They both provided vivid and detailed descriptions of where they had experienced moments of shared joy in the successful moments during their races or moments of adversity and failure. Brymer and Gray (2009) discuss the importance of outdoor environments to athletes’ learning experiences. Natural spaces create a sense of adventure among athletes and result in personal transformation by allowing athletes to “disconnect and escape from the demands of everyday life” (p. 124). The findings of this study support Brymer and Gray’s
(2009) research, and confirm the value of outdoor environments in shaping cyclists’ embodied learning experiences racing and training their bicycles.

**Changing Identity through an Appreciation of Nature**

Participants’ individual identities changed as a result of their learning experiences situated in nature and dealing with its physical nature. This section addresses the objective of this study’s purpose by answering the research question: how does the sport of amateur bicycle racing shape participants’ individual and social identities?

Chad described how his bicycle has shaped his identity through the way he embodies his bike as it intersects with the physical forces of nature while he descends hills:

> But I like the sound of the spokes when you’re going over 50 miles an hour – there’s some other sound that they have…cuz when I’m going that fast and I’m down on the top tube I can hear it. (Chapter Six).

Chad’s appreciation for nature was in part manifested through the way he was able to experience fear by pushing the limits of the laws of gravity and of physical forces on his bicycle. His identity had changed as a result of overcoming fear by taking risks during his 50+ mile-per-hour descents down steep hills. Brymer and Schweitzer (2012) found that fear experienced in nature is often seen as a barrier among athletes. The sound Chad heard from the force of the wind moving through his wheel spokes was an embodied pathway to his experiencing fear he described as “pucker factor.” Chad developed a sense of courage in overcoming his fear and as a result felt more strength and confidence. In a social sense, his ability to overcome fear by taking these risks on his bicycle were validated by other racers. I have personally witnessed expressions of disbelief from other cyclists as a result of Chad’s feats of risk-taking behaviors during our daily training rides. Chad may view this as a badge of courage among the other members of his social network.
of cyclists; embodying personal strength as a “road warrior” by overcoming feelings of fear that, in the eyes of others, would no doubt choose safety over the risk of injury by taking risks. Chad’s identity had also changed as a result of his time-trial racing experiences.

Chad mentioned during his interview that if he was able to ride at 85-90% of his maximum heart rate in rain, and freezing temperatures or other adverse weather conditions for an hour on his bike. He could also endure the rigors of boot camp a second time as an older adult. Dealing with the emotional effects of pain and through pushing his body to his physical limits on his time-trial bike allowed him to overcome his hesitation of re-enlisting in the Army Reserves at age 54. He had previously been apprehensive about his strength because of his age when he compared himself to the younger soldiers. The physical and embodied strength he gained in time-trialing changed his perception of personal confidence and it carried over to his experiences as an older re-enlistee.

I just had to keep up with the 20 year olds, but I knew from riding in 35-degree rain and going at 95% of my max heart rate for an hour. You know if the weather sucked or if it was hot or we didn’t have enough water, I knew those little kids would crack.

Chad’s identity also changed through his discovery of his natural talent for riding a bicycle at a young age. Through his love of experimenting with the forces of nature on his bicycle, Chad not only identified with the feelings he experienced on his bike such as the smoothness he felt going fast, but also of the moments of weightlessness he described as “lightness” when he reflexively shifted his weight on his bicycle while counter-steering through corners. Chad’s meaning-making experiences cycling with other local riders during his daily training ride also fostered a love of the outdoor landscapes that intersected with his riding experiences.
The result of his embodied connections with his bicycle and the people and landscapes where they intersected added value and authenticity to his life. Chad became so changed as a result of his daily rides, that it became a primary reason for his need to schedule specific time to be disconnected from his work life so that he could pursue his passion for riding and racing his bicycle. Myra’s identity also changed as a result of her experiences in nature.

Myra embodied feelings of freedom through her love of nature and by riding with her network of other friends during her weekday morning commutes to work. Her identity changed as a result of the bonds she formed with nature and to the people with whom she rode. Her purpose and focus shifted from loving to sleep in longer in the mornings and drive to work to becoming more physically fit and socially responsible by riding her bike. This opportunity allowed her to embrace adventure and experience an immersion into nature each day. Myra formed new social networks by riding her bicycle with other commuters and the result was long-lasting, valuable friendships. She felt a deep connection to nature through her surroundings while riding her bike with her friends each day. She described the beauty of the sun rising in the morning and to seeing the different phases of the moon during her rides as well as through sensing seasonal changes of the weather. Myra also felt connected to the group of riders she was sharing her experiences through describing it as a “camaraderie thing.” Paul also felt a connection to nature riding his bicycle with his cycling network throughout the roads he was able to access immediately outside his home.

Paul described the beauty of Lancaster County that lay hidden from the view of most people who drove their cars by using its major roads and highways. He witnessed and shared the aesthetic beauty of Lancaster County’s natural habitats and farmlands by accessing these quiet areas on his bicycle during his training rides with other cyclists. The beauty in nature that Paul experienced during his rides was a way for him to acknowledge the work of his Creator. It also reflected and confirmed Paul’s spiritual belief that through his appreciation of nature, he was able
to feel his reverence for God. Paul’s bike riding changed his identity for other reasons. By being able to access nature so close to his home, he was able to quickly escape stress from his job and improve his overall mental and physical health. He mentioned his wife often noticed when he was feeling stress from work and so, encouraged him to ride his bike, because she knew he would be happier when he came home again from his ride. The result of Paul’s racing and training experiences changed his identity by allowing him to feel freedom and gain control in his life through balancing work with cycling. Kara’s identity also changed as a result of her racing experiences situated in natural outdoor environments.

Kara discovered play again in her life when she re-discovered her bicycle. The result brought changes to both her individual and social identities. She mentioned experiencing a complete sense of joy of “being in the moment” as, situated in nature, she could be spontaneous in her life again like she had as a child. Her previous perception had been that most adults, because of work and their financial responsibilities, are compelled to living boring, routine lives. Kara’s identity change reflected Brymer & Gray’s (2009) research that through her harmonious experiences on her bicycle, she was in effect, “dancing with nature” (p.1). She felt freedom through the beauty of nature, her bike and her racing friends. The result shifted her perspective that being an adult meant leading a boring and routine lifestyle. Through her bodily self-expression through movement on her bicycle which Merleau-Ponty (1962) refers to as motor intentionality, Kara felt connected with nature and to her network of friends (p. 137). The networks where racers, their bicycles, and other riders intersect also foster improvements to their individual and social identities through self-discipline and the positive emotional benefits of hard work.
Fostering a Change in Identity by “Being a Better Person”

Participants in this study also realized changes to their individual and social identities through self-discipline and hard work which resulted in positive physical and emotional benefits to their lives. Through the analysis of participants’ interviews, this section focuses on answering the second and third research questions: what role does the bicycle play in cyclists’ meaning-making through their embodied learning experiences, and how do participants describe the ways the sport of cycling has helped them build their social networks?

Paul indicated that he had become “a better man” as a result of overcoming his fear of not being able to finish his first several races. Ultimately, by focusing on developing stamina and strength through training, he developed confidence in himself that resulted in his realization that his hard work paid off when he was finally able to finish his races. His ethic of hard work fostered through racing and training on his bicycle transformed his worldview of the importance of how diligence and balance intersects with peoples’ lives. It also brought changes to several other areas of his individual and social life.

Paul felt less stressed and more creative in his professional career due to how racing brought a feeling of balance in his life. Working hard and taking care of his body was a way that he brought balance to his life. The hard work he invested in his cycling practice along with his local network of racers reflected his spiritual beliefs of living a moral life through keeping his body and mind healthy. Paul had previously mentioned that his spiritual beliefs included his love and appreciation of nature. The result of his hard work and feeling less stress created more balance in his life in which he described himself as “being a better man.” Brymer and Gray’s (2009) study of extreme sports posits spiritual connections are made as a result of the athletes “fluid and responsive interplay” in nature (p. 3). Paul’s experiences on his bicycle led to other improvements in his life such as maintaining a healthy diet and improving his overall physical
fitness. Jason also experienced changes to his identify through his connection to his racing network that resulted in improvements to his personal and social identity.

When Jason began racing his bicycle he realized that he developed an increase in awareness of the role his eating habits had on his overall performance and to his health outside of the sport of cycling. He mentioned that through the changes he made in his life on his bicycle, his level of physical fitness increased and that he experienced less stress in his life outside of cycling and indicated that he felt more mentally fit. He indicated that he felt happier as a result of his embodied feeling of freedom on his bicycle. His Haiku reflected his sentiment of freedom: “The places we go and see, joy and possibility.” He credited his father-in-law and many other local racers who, through their prior experiences racing, had “passed the baton” on to him. The result was a transformation in Jason’s life. He stopped smoking, quit his job driving a grain truck and immersed himself into the sport and business of cycling. Jason’s bicycle and his cycling network not only supported his efforts in becoming a successful, well-known local racer, but helped him connect to a new career in becoming a bicycle shop owner-operator-mechanic. Jason felt freedom and autonomy by having his own business. He mentioned that he felt indebted to the people in his cycling network who had supported him and that it was his turn to pass the information he had learned to new riders “with due diligence.” Jason designed his bike shop to become a friendly place for cyclists of all types and abilities to informally gather and socialize or meet for group rides. Myra and Rory had made improvements to their identities through their practice of bicycle racing. Cycling had been a path for them to learn and practice tolerance and understanding of people that were not like them. As a result, they indicated that they had become more socially active in their cycling community by promoting cycling as a responsible means of transportation.

Through Rory’s “natural connections” with other cyclists brought through sharing a common love of the sport of bicycle racing, he experienced a “shared sense of freedom” that resulted in him being more tolerant of other people. He explained that although riders draw from
many trades, professions, cultural and spiritual backgrounds, they are connected through their mutual love of the sport. He explained that in his view, the “social array of cyclists” are also more tolerant because of the frequency with which they deal with angry, hostile motorists who do not think cyclists should utilize public roadways as a means of transportation. Rory’s identity changed as a result of his understanding of people’s differences and becoming an advocate for sharing public roadways. Myra also used cycling as a pathway to network with other people through her racing experiences. By sharing a common bond, Myra was able to put aside the personality differences among her teammates and that resulted in her feeling unity with them. The change that she realized in her identity through cycling transferred to other areas of her life. She realized that through cycling, she shared a bond with “the DUI guy” she saw on her way to work. By challenging her own personality, Myra had taken social action to make improvements to her health, bad driving habits and emotional well-being. My personal experiences racing my bicycle as it lies interconnected within the social network of other riders brought changes to my social and individual identities too.

Cycling promoted a feeling of physical well-being and health in my personal life and the result shifted my identity in several ways. By developing fitness through training and racing, my body physically changed. I lost 30 pounds and as a result, experienced more energy and stamina on a daily basis in other aspects of my life. Through these changes I embodied confidence in my own mind as well as through my social identity. The strength and stamina that developed in my body through the practice of self-discipline and commitment to the pursuit of becoming a successful racer, transferred to my professional career of teaching. By connecting to my successes in cycling, I gained confidence in my teaching and through my social interactions with people outside of the sport of road racing. The bicycle as an object, was in part, responsible for shaping the changes to my personal and social identities. Fenwick and Edwards (2010) discuss the importance of objects in light of actor network theory as not only a way to connect to learning
experiences but also as a way to “feel disconnected and excluded [from things] even when they are connected” (p.2). In the next section of this chapter I discuss how cyclists’ experiences with their bicycles can result in fostering connections to their experiences or in their perceptions of dis-connectivity I refer to as the co-present/other bicycle.

**The Co-Present/Other Bicycle**

The second theme of findings revealed through this research is of cyclists’ relationship with objects, set within a social context, that give rise to both negative and positive effects to their learning experiences. The findings relate to Merleau-Ponty’s concept of reversibility of the human body in as much as objects become part of us and we become part of them as described in more detail in Chapter Three. Although participants did not use the terms directly, they described their bicycles as either co-present or “other” depending on the information they access through their body as a result of their racing and training experiences. While the section discussing the co-present bicycle investigates all three research questions as part of the study’s purpose, the “other” bicycle focuses mostly on individual cyclists’ experiences through their bicycle.

During moments when their pre-reflective habit bodies were experiencing rhythm, harmony and other positive aspects of cycling, participants in this study described their experiences as positive. Alternately, their reflective conscious bodies were more present when they were experiencing the negative effects of mechanical problems with their bicycles, or feeling pain or other elements of emotional dis-connectivity through their bicycles. These phenomena have been described in more detail by Merleau-Ponty (1962) and Gendlin (2004).

Merleau-Ponty’s (1962) philosophy reveals his position that our lived-body articulates meaning through a simultaneous, back-and-forth dialogue of the pre-reflectivity habit body and the reflective, conscious body. In other words, the body has an important role in providing us
with information about the objects we use, for example, in cycling, and we also, at the same time, gain understanding of those objects through conscious reflection. Gendlin (2004) refers to this as the “zig-zag between words and felt-sense” (p. 108). Gendlin posits that we constantly switch between embodied awareness brought through the corporeality of the body and our conscious thought processes in making meaning of our experiences. In this study, participants experienced their bikes as co-present during moments when they felt rhythm, harmony and smoothness while racing or training. They also described their bikes as “other” through their negative experiences enduring physical or emotional pain, adverse weather conditions or mechanical problems which resulted in a feeling of dis-connectivity with their bicycles.

**The Co-Present Bicycle**

All of the participants interviewed in this study draw from many years of cycling. Their cycling bodies hold habit memories that have resulted from repeated use of certain muscles that have been memorized and thus are used without conscious effort (Bergson, 2004 as cited in Krakauer & Shadmehr, 2006). Habit memories that form through motor learning among cyclists develop over many years of racing experience and thus become used reflexively. In other words, cyclists do not always consciously think about the movements they make with their bodies while racing. Among the findings in this study, this phenomenon contributes to participants’ ability to facilitate individual embodied experiences such as feeling rhythm, harmony through bodily movement or momentary feelings that they are unaware of the bicycle that they are riding or racing. Their experiences open them to new opportunities to learn through their bodies such as in co-construction of shared experiences or feelings of greater interconnectivity to other objects and riders with whom they engage in the sport of cycling. In this study, racers’ experiences with habit memories and muscle memory brought through motor learning, reduced the need for them to rely
on their cognitive skills in racing, and the result fostered embodied experiences among cyclists that they were unaware of their bicycle or that they felt connected to their bicycles as if it were a part of their bodies.

All of the athletes in this study indicated that at moments, they felt connected to their bikes. In describing these moments, Kara, Myra and Paul used terms to describe their bikes as co-present through phrases such as “feeling one with the bike,” “being in tune,” or “my legs were just systematically doing it on their own.” Chad indicated he was not consciously aware of riding his fixie bike describing it as “silent and smooth” that sometimes lasted for great lengths of time. Rory indicated that he experienced moments that he was unaware of how he had ridden from one point on his journey to work to another by using the term transposed (he may have meant translocated). Cyclists’ embodied interconnectivity with their bicycles opens them up to opportunities for them to experience other types of connections such as to other riders or to other things that are part of their cycling networks. Kerr (2016) speaking of the phenomenon of object-human assemblages in actor network theory posits:

(object-human assemblages) create vastly different qualities and capacities from singular parts. This is easily understood in the case of sport, where athletes can be understood as possessing particular and often impressive qualities owning to the athlete-assemblage, consisting of a human plus a variety of technologies and training that transform the human into something surpassing normal human ability (p. 5).

Kara described her body as flowing with her bicycle when she felt fit and the result had her feeling like her bicycle was co-present, that she “became one with it.” She also mentioned that through her experiences of speeding through corners during her races and hearing the “hissing sounds” of all of the racers’ freewheels her bike seemed to become more unnoticeable, more transparent.
Jason experienced his bike as co-present through his interconnectivity to the technological devices that he used during his races. The devices mounted to his bicycle handlebars monitored his current heart-rate, his cadence, or speed in pedaling, and the power he was exerting during races. The devices helped Jason consciously confirm what information his pre-reflective body had already accessed. In essence, he as Gendlin (2004) argues, would zig zag back and forth between modes of the bicycle as co-present and other as a means to double check that he was able to “take one more big pull here” during his races (p. 108).

During one of Myra’s races, when her bike felt co-present, she described her bike as: “not even feeling like I was peddling, I was going through corners almost hitting every curb”. Myra indicated that she was able to sense the energy of every rider, wheel to wheel as she raced embedded in a tightly packed peloton of other racers speeding through corners as an out-of-body experience. Through her co-present bicycle, Myra was able to feel the power in her body during her races and almost predict that she would finish well in her race. Participants also discussed how they experienced their bicycles as present arising from moments in which they became more aware of their bicycle as a barrier or obstacle to them.

The “Other” Bicycle

As a result of the findings of this research, the phenomenon of the “other” bicycle arose from participant’s interviews as they discussed their embodied feelings of disharmony with their bicycles brought through problems with their bicycle or their body. As a result, they noticed their bicycles as a barrier or felt disconnected from them. This feeling of dis-connectivity from their bicycles produced an opposite effect compared to moments when they had experienced their bicycles as co-present. These moments often occurred when they experienced physical pain, fatigue in their body or when their bicycles were not operating properly in a mechanical sense.
During such moments when they noticed their bicycles, Chad and Paul indicated they experienced disharmonious feelings from physical barriers arising from their bodies. Paul noticed he was fighting with his bike when was consciously aware of his difficulty breathing during his physical struggles to ascend steep hills or trying to “hang in there” when his races were extremely difficult. This finding supports Allen-Collinson and Owton’s (2014) research on “acoustic knowing” through athletes’ rhythmic breathing sounds as they interconnect with their other embodied perceptions (p.602). Chad’s description of moments when he noticed his bike occurred when his legs felt as though he was “swimming in molasses.” In experiencing fatigue in his legs, Chad experienced dis-connectivity with his bike and thus it became noticeable and distracting to him. He mentioned that he experienced similar feelings when he was in physical pain. On one occasion, he had actually dismounted from his bicycle to check to see if one of his tires was flat.

Kara also noticed her bicycle as “other” during moments when she was exhausted as a result of injuries she had sustained racing. She indicated that her legs felt “like fence posts” during moments when her bicycle was present.

Interestingly, Myra indicated that she felt empowered through her dis-connectivity with her bicycle during moments when she noticed her bicycle as present. In moments when Myra felt pain and discomfort on her bicycle while she trained for her races, it represented a hurdle for her to push past, knowing that through her awareness she could use her bicycle as a means to improve her level of fitness and performance. Myra’s experience of her bicycle as present became a vehicle to distinguish pain from discomfort. For Myra, pain was an indicator that something was wrong with her body and that she needed to stop and allow her body to recover. When Myra experienced discomfort however, she had knowledge from her body that she was building her fitness from workout to workout. Myra also described emotional moments when she felt heavy on her bike when something as simple as a gear not meshing correctly when she was riding made her notice her bicycle as present. She indicated that she and her bicycle were “not in tune together”.
My own experiences with my bicycle supported the findings of this study with respect to the co-present/other bicycle. During moments when my bicycle was noticeable to me, it presented itself in a way that I was wrestling with it. In other moments when my body was tired, I experienced feelings of dis-connectivity with my bicycle. I felt as if I was pedaling in squares if I was not able to develop a rhythm in my cadence. At other moments, my bicycle felt like it was part of me. I experienced moments of getting lost brought through my embodied feelings of rhythm and harmony in pedaling. The feelings produced a perception of flow that allowed me to disengage from the frequency of always thinking and reflecting on what had happened throughout the day. Through my bicycle, I also embodied safety of riding in large groups with other riders. I felt protected from getting hit by cars along the public roadways I rode. The safety of riding in a pack allowed me to embody other elements of my rides. I was able to connect to the beauty of my physical surroundings during my rides or feel the harmony of my physical movements riding my bicycle. Heywood (2015) argues engaging the entire body through immersive sports such as road cycling leads to feelings of empowerment and increases athletes’ attention spans. This had been found to be the result of rhythmic movements brought through reflexivity and motor learning. Heywood terms “being in the zone” in leisure sports such as road racing (p.26). Heywood’s (2015) use of the phrase “being in the zone” is confirmed by participants’ uses of “feeling one with the bike,” “being in tune,” or “my legs were just systematically doing it on their own.” But the negative aspects of experiencing the bicycle as present are also important to the learning experiences of athletes. Through such experiences of dis-connectivity with objects they use in sports, athletes may learn to use them as a barometer to understand their physical threshold limits to improve their performance or to prevent physical injuries from pushing themselves too hard.

As a result of the knowledge participants gained with the bicycles as an object that they experienced as co-present or other, the findings of this study indicate that reflexivity of movement brought through habit memories in motor learning among cyclists racing and training
their bicycles affords them opportunities to access new learning. Bengtsson (2013) argues objects, like the bicycle, promote habitual learning in adults not through a linear sense, but through the ways such tools promote interconnectivity to other people and physical spaces where their embodied experiences unfold. Accordingly, when road racers experienced their bicycles as present during times when they felt pain or discomfort or through emotional dis-connectivity with their bikes, they were able to utilize this embodied information to assess their physical limits to prevent possible injury. In the last section of this chapter, the theme of part of self-imposed pain and suffering is discussed. Self-imposed pain and suffering was found to change cyclists’ perceptions of themselves and others within and outside of their sporting communities.

**Changes from Self-Imposed Pain and Suffering**

The third theme in this study found a strong relationship between the emotional meaning cyclists experience through self-imposed suffering while racing and training on their bikes. By pushing their physiological abilities, cyclists not only experienced changes in their individual identities such as through confidence, but were able to gauge their present level of fitness and guide their personal physical development through their embodied cycling experiences. Throughout this section, elements of all three research questions as part of this study’s purpose are answered.

It is important to note that the use of the terms pain and suffering in this study result from the cyclists’ perceptive experiences riding their bicycles. The use of these terms within the context of a healthcare setting evoke a different perspective of their meanings (Ferrell & Coyle, 2008). For example, Swartz (2009) in her study of complexity science as it intersects with nurses’ embodied experiences of trauma and fear learning, argues “pain is an experience” (p. 185). Although Swartz’s (2009) research supports athletes’ perspectives of their embodied experiences
with pain, its effect in a healthcare setting originates from a violated or failing body. Pain and suffering were negative, disorienting experiences among patients or healthcare practitioners who cared for them (Swartz, 2009). Pain, however, leads to positive experiences among athletes as it allows them to access knowledge and learning through their bodies (Weedon, 2015; Simpson et al, 2013; Shipway et al, 2012).

Bicycle racing is a highly competitive sport, and an athlete’s will and ability to tolerate pain, sometimes for great lengths of time, in longer races for example, can ultimately affect their performance in light of other cyclists. The psychological aspects of managing pain is rarely addressed in an athlete’s training regimen, but one theory suggests the brain’s central governor shuts down the body’s ability to be pushed to dangerous levels of physiological stress (Noakes, 2007). Noakes (2007) argues an athlete’s will to endure pain is largely psychological and is thought to lie in an athlete’s ability to manipulate the central governor and raise their level of physical exertion past the point where it instructs the body to stop pushing. Cyclists make performance gains when they are able to manipulate their central governor and push past the level where other cyclists would normally stop their physical efforts. A second theory on pain is also aligned with a cyclist’s psychological will, but involves a mental strategy to push, for a short time period (5 seconds) past when they perceive they are at the limit of their performance abilities (Marcora, 2008). “Cycling champions and psychologists agree that whatever strategy is used, you have to regularly train and race with pain in order to manage it well. Pain never gets less painful, but we get better at tolerating it” (What Does It Mean to Suffer, 2017, para 26). But athletes often use their ability to endure pain and suffering as a way to promote feelings of well-being in their sporting experiences.

For example, Simpson et al (2014) found pain and suffering among adventure racing athletes to increase the value of their experiences as the level of their suffering increased. In this study, set in the context of amateur road racers with their bicycles and other racers, the athletes
described their feelings of pain and suffering to be both positive and negative. Road racers were found to embrace pain as an indicator that would lead to building physical strength and stamina. A cyclist’s ability to push themselves into their threshold of pain by overcoming physical and emotional barriers that most people would avoid produced positive social affects. For example, cyclists’ who could endure long moments of pain were recognized by the local community of racers as metaphorical road warriors. Cyclists’ who could endure and embrace pain during their races were seen as strong, resilient winners in the sport of road racing. Among other cyclists, they wore an imaginary badge of honor for being able to suffer. Being able to endure pain and suffering opened road racers up to new opportunities to understand and guide their own bodily abilities and limitations. But pain and suffering were also described by participants as negative elements in their sport. Depending on how they sensed pain, it was seen as a possible indicator that produce physical damage to their bodies. As a result, athletes’ positive and negative experiences with pain and suffering were also found to promote changes not only to their individual identities, but to their social identities both inside and outside their sporting communities.

As a result of my interview with Paul, he indicated that he realized shortly after he started racing that he felt deeply demoralized when he was not able to finish a race. He added that he felt like a failure or a coward. Paul’s identity had changed however, as a result of conditioning his body through years of training, eating properly and learning to embrace pain and discomfort during racing.

It (racing) made me physically and emotionally stronger, you know, because you got to want to finish a race, because you know you’re going to suffer for almost the entire race until the end. You know sometimes my legs felt like they were full of blood and I could not move them. But to know you finished is such a reward.
And you know you accomplished that at least – you can walk away with your head up. (Chapter Five)

Chad offered his perspective of pain through an experience after a time-trial race in the rain in Scranton, PA. He used an imaginary illustration of having been physically violated in prison.

I mean my thighs hurt here (pointing inside of his legs). I was in agony. I hate time trials. I came back (from the race) and almost cried just wiping off my bike. Somebody asked me how it felt – I’m in Graterford and I just got a 300-pound roommate (laughing) cuz it hurt so much between my legs. (Chapter Six)

Chad seemed to wear his experience of pain and suffering after his crash on Turkey Hill like a medal. Although he was unable to recall most of the trauma that occurred to his body because he lost consciousness almost immediately after his fall, Chad had saved his shattered helmet as a symbol of what his body had endured. The stories cyclists share to others about their injuries from training and racing on their bikes afford them agency and respect among other riders, and perhaps people outside of the sport. Swartz’s (2009) research on embodied learning in RN-BSN healthcare students finds that their experiences of pain and suffering promotes communal bonding and self-organization. Simpson et al (2014) research of athletes’ experiences with pain paddling their boats during the Everglades Challenge that through pushing their physical and emotional limits, they found they were able to surpass their own expectations of their bodies’ normal capabilities.

At the end of our second interview together, when I had asked Myra if there were any other moments in her cycling experiences that she felt were important, she said that I had not asked her about her crashes. From her perspective, the pain and suffering she endured as a result of her injuries after such events marked important learning moments through which she self-identified. Kara’s experiences with pain were paradoxical at moments. She described herself as
feeling good even though she was feeling bad. She recalled being pushed by another rider because she felt so bad.

I just kept getting dropped – I couldn’t feel my legs, they were just so blown out.

Jim came up behind me and said - just go harder! You know, you can’t even go one-tenth of a mile faster – that’s when you’re praying for a stop sign. (Chapter Eight).

Kara indicated that the pain she experienced during such hard physical and emotional efforts were only temporary sensations, and that through enduring them, she too, would be able to be smooth and fast on her bicycle. Interestingly, Jason used technology to confirm his pain and discomfort from racing hard on previous days as a guide to his physical development.

In the first 10 miles of a ride, if you’re feeling bad, you’ll probably know through your legs. They call them junky legs or heavy legs. But that doesn’t matter in a race. If your legs don’t feel good, you have to switch it off in your head, and you’re just going to do it…you’re going to suffer. (Chapter Ten)

Jason indicated that through his use of digital sensors attached to his bicycle which measure his heart rate, power output and cadence, he can confirm whether or not he is recovering from the pain and discomfort brought through his efforts during previous races or hard workouts. Also, he has learned through these electronic devises, whether his able to make additional hard physical efforts during his races. My own experiences with pain and suffering confirm the findings of the analysis of narratives of the participants in this study.

Many of my personal moments experiencing pain and suffering while racing or training were self-inflicted. By learning to endure the discomfort of riding in weather extremes, I self-identified as a hardman of Belgium, and embodied a connection to this small sub-group of my teammates who wore the lion symbol on their race uniforms. HMB: hardmen of Belgium - a small group of cyclists on the same team who regarded pain and suffering during racing and
braving elements of the weather that would find most other racers training indoors in the comfort of their homes. Just like the professional racers from Belgium who had to endure physical elements of the weather such as wind from the North Sea, rain, and cold temperatures, and trained on poorly paved roads on a daily basis, we not only symbolically identified with them, but also identified through their ability to embrace and endure pain and suffering during our rides. I also learned that my reputation among local racers grew as a direct result of being able to distract myself from pain and discomfort by embracing it. Getting through the first moments of pain hurts, but after a while your body experiences numbness and you begin to forget about it. Cyclists seem to intuitively know which riders can and which riders can’t get beyond the pain of pushing yourself to these physiological limits. It seems to be a form of currency through strength and resilience.

**Summary**

In summary, through the three emergent themes drawn from the data analysis and in my personal ethnographic experiences, the findings of this study indicate that, in light of the theoretical frameworks employed throughout this research, amateur road racers experience valuable learning through embodied learning opportunities through their bicycles that produces changes to their individual and social identities. Their experiences also open them to new opportunities to embody connectivity to their bicycles. The result has led to changes to their social and individual identities through self-imposed pain and suffering while training and racing their bicycles.

Participants in this study experienced strength, resilience and balance in their lives as a result of their co-constructed embodied learning experiences racing their bicycles. By taking risks in the sport of cycling, working through failures when cyclists began their road racing careers,
and through the sheer joy and freedom of the immersive physical nature of bike racing situated in outdoor environments, participants experienced changes to their individual identities. Athletes experienced changes to their identities as a result of pushing themselves to their physical limits during races and training rides. This learning extended to areas outside of the sport of cycling to their family and work lives. For example, several participants acknowledged that through their failure to finish races early in their cycling careers they understood failure differently in other aspects of their lives. The bicycle as an object shaped their experiences and was critical to their embodied learning experiences.

All of the participants interviewed in this study draw from many years of road racing experience, where their bicycles functioned as the co-present/other, though they didn’t discuss this directly. The phenomenon of co-present/other arises from cyclists’ reflexivity with their bicycles through motor learning. It also relates to Merleau-Ponty’s phenomenon of reversibility between “the sentient to the sensed” as the object of the bicycle becomes part of the cyclist’s body in their racing experiences and vice-versa (1964, p. 142). Participants’ movements on their bicycles became so familiar to them as a result of their lengthy experience with their bicycles, that their motor movements were not always in their consciousness. The cyclists’ bodies hold habit memories that have resulted from repeated use of certain muscles (Bergson, 2004). Dant (2004) describes motor reflexivity as the fusion of learner to experience which results in a symbiotic, co-joined entity.

This type of motor learning in cycling may contribute to cyclists’ ability to facilitate embodied experiences individually and in co-constructing shared embodied interconnectivity with other cyclists with whom they are engaged in the sport of road racing. The elements of muscle memory, which reduce the need for cognition in riding, and body schema, which allows the body to include objects as extensions of their body’s awareness contribute to a cyclist’s reflexivity in cycling and affords them new opportunities to learn through their bodies.
Alternately, racers also experience their bicycles as present during moments when they are physically struggling on their bicycles or when the bicycle was not operating well mechanically.

Participants were able to gauge their present level of physical fitness through the sensory information brought through the corporeality of their bodies while racing their bicycles. Through their embodied experiences with their harmonic and rhythmic motor movements, breath cycles, and pedaling cadence, and in experiencing smoothness through their overall movements on their bicycles, participants described their bicycles as co-present through feelings of strength, confidence and *being one* with their bicycles or as if their bike was part of them. Conversely, they also experienced fatigue and dis-connectivity with their bicycles resulting in experiences where they noticed their bicycle as “other” or disengaged from their perception of the bike being unified with their body. Participants described themselves as feeling *junky legs, heavy on their bikes, pedaling in squares* or *wrestling with my bike* during moments when they experienced their bike as present. Racers were also able to guide improvements to their physical development through their embodied experiences on their bicycles.

Through feedback brought through embodied sensory experiences while riding their bicycles and through other objects used in the sport of cycling such as technological devices like heart-rate monitors, cadence sensors and power meters, cyclists could use the information to physically push themselves resulting in improvements to their strength, endurance and racing performance. The bicycle was found to be an important element to their ability to access information through their bodies to guide their racing skills and physiological development.

The participants of this study gained knowledge and connectivity with their bicycles as they intersected with other objects and actors and the physical surroundings embedded in their cycling networks. This knowledge and connectivity affords them new opportunities to access meaningful learning experiences. Bengtsson (2013) argues objects, like the bicycle, promote habitual learning in adults not through a linear sense, but through the ways they promote
interconnectivity to other people and physical spaces where their embodied experiences unfold. The embodiment of self-imposed pain and suffering was also found to change cyclists’ perceptions of themselves and others within and outside of their sporting communities.

Although pain and suffering may be perceived differently in healthcare settings, in the context of amateur road racers with their bicycles and other racers, this study found it to be an individual and socially integrative learning experience. Self-imposed pain and suffering opened cyclists to new opportunities to understand and guide their own bodily abilities and limitations and to others with whom they share those experiences. Cyclists co-constructed experiences with pain and suffering were also found to promote changes to cyclists’ perceptions of others, both inside and outside their sporting communities.

Myra’s perception of the pain and suffering she endured as a result of her injuries after crashes during races allowed her to distinguish pain from discomfort. Kara’s experiences with pain were paradoxical at moments. She described herself as feeling good even though she was feeling bad. She recalled being pushed by another rider because she felt so bad.

I just kept getting dropped – I couldn’t feel my legs, they were just so blown out. They felt like fence posts. Jim came up behind me and said - just go harder! You know, you can’t even go one-tenth of a mile faster – that’s when you’re praying for a stop sign.

Kara indicated that the pain she experienced during such hard physical and emotional efforts were only temporary sensations, and that through enduring them, she too, would be able to be smooth and fast on her bicycle. She also experienced emotional pain in the separation from her cycling community as a result of her aging body and the injuries she had sustained over her years of racing. Interestingly, Jason relied on his technological devices on his bike to push past his pain and as an indicator of his body’s present physiological threshold levels during his races.
In the first 10 miles of a ride, if you’re feeling bad, you’ll probably know through your legs. They call them junky legs or heavy legs. But that doesn’t matter in a race. If your legs don’t feel good, you have to switch it off in your head, and you’re just going to do it…you’re going to suffer.

My personal experiences in road racing support the findings of the participants interviewed in this study. Engaging my body through the immersive sport of road racing afforded me new opportunities to gain confidence outside of the sport of cycling through my success in racing, and to embody the rhythm of the movement through my body by getting out of my head leading to feelings of personal freedom, and strength. The sport of amateur road racing also helped me understand the value of shared pain experienced with other cyclists during races as a way to understand myself as well as a pathway that led to forming strong bonds with other racers. By putting myself “on the rivet” during my races, I learned that by enduring the temporary sensation of pain and suffering, I gained the longer-lasting effects of feelings of strength and confidence. It also allowed me to be recognized by other racers as successful and resilient.

In the next chapter of this section of the dissertation, a discussion of the implications of the findings of this research is offered for the theory and practice of embodied learning in the field of lifelong learning and adult education.
CHAPTER TWELVE: IMPLICATIONS FOR THEORY, PRACTICE AND RESEARCH

The world is for me
My tools folded into me
I am for the world

The purpose of this study is to examine how adults informally learn through engaging with their bicycles in the sport of amateur road racing, and to understand how this learning has shaped their individual and social identities.

The research questions guiding this study are:

1. What role does the bicycle play in the embodied learning and felt-sense experiences of participants?
2. How does the sport of amateur bicycle racing shape participants’ individual and social identities?
3. How do participants describe the ways the sport of cycling has helped them build their social networks?

The Haiku poem that begins this chapter is a personal reflection of my learning from the philosophy of Merleau-Ponty as well as through many years of racing my bicycle. The bicycle has allowed me to see the world from a unique perspective and as an instrument of my learning, a tool that has become part of me. This realization has changed the way I view the world through the movement of my body, in seeing new places and in the co-construction of experiences I have had racing with other bike riders.

In the final chapter of this dissertation, I first briefly summarize the thematic findings of the study. Next, I consider the connections to theory and practice by revisiting how knowledge and meaning-making is facilitated through objects and the corporeality of the body. Third, a discussion is offered of how this research uncovered implications for the multiple theories used in
the framework of this research. Fourth, I discuss the limitations of the study and offer suggestions for future research. Finally, I briefly offer my closing thoughts and reflections about my personal journey brought through this research opportunity.

Summary of Themes of Findings

As discussed in the last chapter, three themes emerged from the narrative analysis of participants’ interviews and through my personal ethnographic experiences that explore how amateur bicycle road racers learn through their bicycles and how this learning shapes their individual and social identities. Given that these themes were discussed in detail in the last chapter, they are only briefly summarized here in order to set the context for a discussion of the implications for theory and practice.

The first theme focused on the role of embodied networks in changing identity, and revealed how these networks worked to do so – namely through: the embodying of the learning itself; in a greater appreciation of nature; and in seeing oneself as a better person as a result of interactions in the network (with the bicycle and the other riders). Participants experienced changes to their identities through their bicycles which led to increased feelings of freedom, camaraderie, and spirituality.

The second theme explored the co-present/other bike through how bike racers access learning through their bicycles as an object assemblage that results from years of racing experience through motor learning and habit memory. Participants described their bikes as co-present during moments when they felt rhythm, harmony and smoothness while racing or training. They also described their bikes as “other” through their negative experiences enduring physical or emotional pain, adverse weather conditions or mechanical problems which resulted in a feeling of dis-connectivity with their bicycles.
Last, the final theme explored self-inflicted moments of pain and suffering through which participants were able to gauge their physical level of fitness through riding their bicycles. Road racers also experienced fatigue and dis-connectivity with their bicycles through the physical and emotional aspects of pain and discomfort. The will among cyclists to endure self-imposed pain and suffering opened participants to new opportunities to understand and guide their own bodily abilities and limitations and to others with whom they share those experiences. Cyclists co-constructed experiences with pain and suffering were also found to promote changes to cyclists’ perceptions of others, both inside and outside their sporting communities.

The significance of the findings that resulted from the rich and complex narratives offered through the stories told by the participants in this study as well as in the autoethnography has implications for Embodied Learning Theory and practice in adult education and lifelong learning. It also has implications for further research in the sociological areas of Leisure Studies and Actor Network Theory and to the philosophies of Eugene Gendlin and Maurice Merleau-Ponty.

**Implications for Theory: Towards a More Robust Embodied Adult Learning Theory**

This study was grounded in embodied adult learning theory, Actor Network Theory (ANT), and the theoretical works of Merleau Ponty and Eugene Gendlin on the philosophy of the body. As noted earlier, the literature on embodied adult learning in the field has given limited attention to the role of objects in learning and the role of others as connected to the learner, but has rather focused on the learner as an isolated individual who learns through the body in combination with cognitive, emotional, and multiple forms of engagement in the world. While the role of objects and others in a network isn’t excluded in embodied adult learning theory, these networked engagements including interaction with others and with objects have not been in the
foreground in embodied learning discussions up to this point. As Fenwick and Edwards (2011) discuss, Actor Network Theory, does foreground the role of objects and networks of other people, though they do not necessarily discuss embodied adult learning theory. Similarly, while Merleau-Ponty does discuss the body in his philosophy of the body, he doesn’t directly discuss the role of objects and networks of other learners per se in his philosophy of the body. Here I consider first what actor network theory contributes to embodied adult learning based on the findings of the study, and then how these blend with Merleau-Ponty’s philosophy of the body.

**ANT and Embodied Adult Learning**

Actor Network Theory (ANT) highlights the engagement of actors (who are in fact bodies) with networks that include objects and other embodied beings in a network. While it has not directly focused on the body per se, bodies are implied in Actor Network Theory in its attention to the concept of *assemblage* (the learning body acting in consort with an object) and with other embodied beings. Heywood (2015) argues socially supportive and engaged settings helps learners to connect with and have additional learning experiences. This study found that the experiences of bicycle riders, in their embodied connection to the bicycle as *assemblage* and in their bonds with one another led to feelings of camaraderie and unity through an ethos of “being in it together”, and through their shared efforts in their sporting experiences. The findings of this study are supportive of Heywood’s (2015) argument that immersive experiences in sport (as one area of learning) broaden our understanding of the role of the body in learning.

Actor Network Theory examines multiple factors involved in social situations and as the theoretical approach used in this study, it provides a perspective for examining the important relationships we have through humans and the objects they use that surround them as part of their social networks. However, as noted by Latour (2005) the relationships we have with the objects
that are part of the social networks tend to be discarded in discussions of learning overall, including in embodied adult learning theory. Yet these objects are in fact, an extension of our body schema and its emergent properties manifested in the object-actor (body/rider) assemblage. In other words, humans and objects and other people are typically seen as separate contributors in affecting learning in a social learning situation, yet ANT suggests that these function in a network.

As ANT attempts to uncover our relationships with objects, what is most relevant to these relationships is the agency these objects afford their networks. As a constructivist approach to understanding knowing and learning, ANT attempts to understand networks of interrelated things and ideas, but does not ask how and why questions (Latour, 2005), such as how objects and people as networks function to engage learning or facilitate relationships with others. I would argue that the findings that have emerged from this research prompts us to foreground how the body and the relationships we have formed with objects as an embodied assemblage function together, through which new and emergent properties arise. For example, as Kerr (2016) argues a pole vaulter’s pole by itself does not allow the vaulter to jump. Similarly, the athlete is not able to vault without the pole. The pole-vaulter emerges from the assemblage of the vaulter with their pole. Likewise, a bicycle by itself does not ride. Nor does a rider without a bike. But as an assemblage, the rider experiences new meaning as a result of this assemblage such as seen from the participants’ descriptions in experiencing the embodiment of rhythm, flow and harmony that emerge from the rider-bike assemblage.

Several studies and conceptual articles have emerged that argue actors and actants in combination produce additive effects that produce vastly different qualities than when examined as separate entities. Kerr (2016) argues in sport athlete-technology assemblage “transforms the athlete into something surpassing normal human ability” as can be seen with the previous illustration of the pole-vaulter who can, with this athlete-technology assemblage jump “five
meters into the air” (p. 5). In Dant’s (2004) conceptual article of the Driver-Car assemblage, he argues elements of our “social actions” emerge from our “social being” with the assemblage such as driving, transporting, parking, consuming….and so on” (pp. 61-62). Further examination of this phenomenon in ANT with an emphasis on the role of the body in connection with objects, and other embodied beings, may result in our broader understanding of how object-learner assemblages play an important practical role in shaping our social interactions with other networks in education, such as can be seen in formal classroom networks.

For example, Fenwick and Edwards (2011) use ANT to help account for how the physicality of the classroom informs student performance as it intersects with school-wide reform initiatives in particular settings; their approach examines each actor and actant as a single entity in how it shapes change to the network. There are several ways that Embodied Learning Theory and ANT relate to each other, and when used in combination, may help us understand how networks of individual and collective embodied experiences intersect with learning through object assemblages situated within various learning networks. ANT’s approach to objects not only helps validate their importance within the networks where they are found, but also when they are part of a learner’s body schema – existing as assemblages rather than as single entities, the union of the actor-object leads to new opportunities for learners to create new social relationships. For example, students who have developed reflexivity with instruments in biology classrooms such as a microscope may be more aware of the logistical needs of their laboratory partners, the educator’s learning intentions or the emotional tone of the team to which they belong. Objects used reflexively can also help individual learners gain embodied meaning through the way they physically help us connect to our experiences. For example, a hiker’s embodied feeling of the trail is perceived in part through the physicality of his/her hiking boots. Additionally, the physical surroundings along the hiking path are filled with objects which viewed only as single entities dismiss the importance of the embodied meaning to which the
hiker’s constructs meaning through his/her hiking experience. The important relationship of the embodied experiences of the walker as they intersect with the network of other objects establishes an important way adults learn as individuals. Objects shape and inform the context and content of our embodied learning experiences. By considering the objects that become part of an adult learner’s embodied experiences, we can bring more awareness to the important ways the objects aid in the facilitation of affective qualities such as freedom of movement, connecting to the environment and feeling present in the moment they engage their bodies in action with nature.

Another way ANT and Embodied Learning Theory relate to one another and can help promote further awareness to their role in adult learning can be seen through the way they add to our understanding of our social relationships. Adult Embodied Learning Theory has largely focused on the role of the individual learner in making meaning through the body, but has not to any large extent, considered the social context of embodied learning. Currently there are only a few existing studies that examine embodied learning in adult learning theory (Sodhi & Cohen, 2012; Tobin & Tisdell, 2015), but these studies do not discuss the social context. Drawing on ANT’s recent approach to the examination of object-assemblages in networks that finds value in relationships of object-human relationships in combination with the social context of an actors embodied learning as these relationships exist, and have not yet been considered, would add value to both theoretical perspectives as they relate to one another.

An example from the data here might help illustrate the point of how collectively shared embodiment of an object intersects with the networks where time, places and actor relationships have shaped meaningful experiences that add value to peoples’ lives. Consider Chad’s shattered helmet. The helmet not only bore the scars of his horrific crash on Turkey Hill, but when he brought it to our second meeting for our interview together, it created an opportunity for both of us to be taken back in time to the moment the crash occurred. As we sat together in silence, I heard Chad audibly take a deep breath, as we both relived our embodied experiences of fear,
physical and emotional pain and in re-living our shared memories. Objects are part of our embodied experiences, and people share meaning through them. By combining ANT’s approach of the value of objects with the shared embodied relationships of the human actors within the networks where they intersect, we can discover the agency that arises from the meaning and relevancy that emerges from these relationships.

None of the discussions so far of Embodied Learning Theory or Actor Network Theory focus on asking how and why questions. But asking how and why questions emerge with effervescence as a result of what happens when an actor shares embodied meaning through objects and object-assemblages with other actors, and can take the discussions of ANT and embodied adult learning theory a step forward. Asking how and why questions becomes an important manner through which we may discover the inter-relationships of things and people in our society, that remains unclear when employing more reductive approaches. Considering the role of Merleau-Ponty’s philosophy of the body in combination with ANT and embodied adult learning theory may cast further light here.

Merleau-Ponty, ANT and Embodied Adult Learning Theory

According to Merleau-Ponty’s (1962) philosophy, the body is not merely an object, but plays a critical integrative role in shaping learning through embodiment and perception. Central to Merleau-Ponty’s philosophy is the body’s generality and anonymity which allows for our unique perceptions to guide our subjective learning experiences. In his work The Primacy of Perception, Merleau-Ponty (1964) argues the human body becomes our point of view on the world, and so becomes part of the way we shape our experiences in learning about the things that surround us (p. 5). The body then, is the “vehicle of being in the world, and for a living being, having a body means being unified with a definite milieu with certain projects and being
perpetually engaged therein” (Merleau-Ponty, 2012, p. 84). In other words, adults shape their learning experiences first through the flow of information between their subject and the objects that are in their world.

Merleau-Ponty (1962) considers the important meaning we make through our embodiment of objects that surround us in our everyday lives. His philosophy provides a conceptual basis for the integration of the body with the material objects and social networks where learning, as an entity, emerges as a result of our interactions with others (Yakhlef, 2010; Dant, 2004). Yakhlef (2010) argues knowledge also emerges from these social interactions that result in personal growth. Thus, we constantly bring changes to our body schema that result in learning new skills and abilities. The findings of this study reveal the importance of knowledge acquired through the human body schema which draws from Merleau-Ponty’s philosophy, the influence of object assemblages from the theoretical framework of ANT, as well as the meaning we make through our embodied experiences as it relates to Adult Learning Theory. But this knowledge and learning begins pre-reflectively as it first reaches us through the corporeality of the body. Drawing on the philosophy of Merleau-Ponty, Yakhlef (2010) argues “learning is corporeal, pre-discursive and pre-social stemming from the body’s perpetual need to cope with tensions arising in the body-environment connections” (p. 409) In other words, not only is the body the primary site of learning, but it is also the means through which we integrate and co-construct our meaning-making experiences that are inclusive of the objects that surround us, and constantly shape our learning that is a result of our actions and interactions with the things and people around us. It is through the mutual influence of Merleau-Ponty’s philosophy of the role of the body in shaping human actions and interactions, ANT and Embodied Adult Learning Theory that we can more clearly negotiate a clearer understanding of the value of a combined, integrative approach to researching their effects.
The role of embodiment and perception brought through the corporeality of the body establishes a connection through which adults acquire knowledge from the objects that surround them in the world. The resulting interconnection of object-subject promotes a silent dialogue between the body and world resulting in a flow of meaning through experience; an articulation of the body to the world and vice-versa. This is the body’s role in learning and *being-in-the world* (Merleau-Ponty, 2012, p. 84). Through the back and forth flow of information through the body and our surroundings, we are united and intertwined and in being so, we can be gathered together with others and engage with them through transcendental inter-subjectivity (Merleau-Ponty, 2012). This means that our subject-object relationships give meaning to others and the things that surround us in the world.

Without using the term object-assemblage directly, Merleau-Ponty (2012) argues its effect as, through our embodiment and perceptions, we become part of the objects that surround us in the world. For example, Merleau-Ponty uses the term operative intentionality to describe our embodied understanding of objects as we perceive them. Drawing on Merleau-Ponty’s philosophy, Crossley (2008) argues, “(I)ntentionality is not only the matter of the way I perceive and think about objects in the world, but also the meaningful and knowledgeable way in which I handle and use them” (p. 231). The knowledge to which Crossley (2008) refers, originates in our bodies as individual learners, but through our continued development of reflexive motor learning, our learning can become integrated to our socially-constructed learning experiences as well. Thus, the integrated thinking of Merleau-Ponty along with those writing about Actor Network Theory and Embodied Adult Learning Theory has implications not only for the continued development of theory, but also for practice in multiple settings. In the next section a discussion is offered of how objects foster social connectivity to other adult learners situated in group settings.
Implications for Practice and Further Research

Material objects used in learning are usually ignored, but they bring qualities to learning by shaping learner’s perceptions through their meaning and relevancy (Olsen, 2010). Lave and Wenger (1991) discuss the practical implications of the social context of situated learning by arguing the importance of the context of where learning takes place, and give limited attention to the tools that are used in learners’ meaning-making experiences. However, situated learning theory does not address with any significance, the learners’ embodied relationships with the objects that are important parts of learning networks, such as can be seen through object-learner assemblages. This research establishes several practical implications for adult education where objects are central to the embodied meaning making experiences adults have within the networks where they take place, as well as implications for education in settings where objects are present but not necessarily obviously central to the learning. Each of these are considered here.

Implications for Practice and Further Research in Object-Centered Settings

This research establishes the importance of pre-reflection to the ways adult learners first acquire knowledge through the realm of the body. The participants’ interactions with their bicycles, which allowed them to negotiate their body movements, and with those with whom they raced arrived before they processed their effects consciously. But, objects are central to learning in some environments, such as in sports settings. Often, objects such as a basketball or football are the central focus and manifested in object-assemblages. These objects not only influence athletes’ learning, but in a similar way to the role of the assemblage established through the findings of this study, such objects as assemblage and in networks with other embodied beings likely foster important changes to their individual and social identities by becoming an integral
part of their embodied experiences. The outcome of the learning that resulted from the changes in the bike racers’ social interactions was realized through their embodiment of autonomy, freedom, self-confidence, strength and power. Furthermore, as the objects become fused to their body schema, used without consciousness through the cyclists’ development of motor learning reflexivity, it led them to new learning opportunities that would not be present otherwise. For example, by not having to concentrate on their bicycle riding skills, participants were able to be aware of the actions of other cyclists, demonstrate social competencies and develop new social relationships.

Much like bicycle racers in this study who draw from years of experience racing their bikes and have experienced fundamental changes in their individual and social identities around their learning through the rider-bicycle assemblage, adult learners who engage with their tools and other objects of learning and practice without conscious effort may also experience changes when the objects they use in learning are co-present. Their assemblage with the tools and objects they use in learning may lead them to connect to other people in their networks. This increased social awareness resulting from the tacit learning through the object assemblages that they have developed may lead to other beneficial social actions.

The relationship of the object to the learner and their social network shapes learners’ individual actions, co-constructed experiences and as well as the “form and content of their social actions” (Dant, 2004, p. 61). For example, and as implied above, in team sports such as softball, basketball and soccer, athletes’ development of reflexivity with the object may lead to moments when they do not have to consciously think about their use of these objects. Athletes may experience moments in which they perceive these objects as co-present as a result of not having to consciously concentrate on their skills with these objects. This gives rise to the opportunity for them to listen to the non-verbal, implicit and silent language, which Gendlin (1996) argues, may be conveyed through the bodies of opposing team players. The athletes’ tacit knowledge of the
objects they use may also allow them to focus on other aspects of their sporting networks such as greater awareness of game strategy or weaknesses of their own team members. Furthermore, when objects become fused to the meaning-making experience of adult learners, as has been found in this study, the result of such object-learner assemblages produces additive affects that are different than if the object and learner were examined as separate entities as with situated learning.

There are many examples of how this likely plays out in many practical adult education settings where knowing through co-present/other object-assemblages produces significant impacts to other members of their networks, but is dependent upon further investigation. One of these examples can be seen in training and development settings and involve adults who learn to operate passenger transport vehicles as a central component of their training programs.

Airline pilots or surgeons who use robotics are other examples where object-assemblages may be seen. Pilots of commercial airlines are required to regularly complete rigorous and lengthy adult education and skill-training programs often through simulation and to demonstrate that they can act as an assemblage in order to remain certified to fly the aircraft used to transports their airline’s passengers. Their training and development as students enrolled in flight school programs certified by the FAA require pilots to hold several additional training certificates in addition to their professional pilot training certification as well as a minimum of an additional 1500 hours of flight experience (PEA.com, 2018). The aircraft then, is an object which is central to their practice as a pilot, and is the primary focus of their learning development. The knowledge and skills they acquire as a result of these programs assures that pilots’ tacit knowledge of the objects they use within their commercial flight networks is thoroughly developed before they can safely transport passengers. But their learning programs largely focus on the acquisition of knowledge through skill-development, the acquisition of learning by meeting behavioral objectives and competency-based training programs. In essence, the learning measures a pilot’s
success through a situated cognitive goal-based program. It is not the pilot-aircraft assemblage that is the focus of their program, but elements of the pilot’s change in behavior accessed through their acquisition of competencies, mastery of skills and achievement of goals in their programs.

Further research into the phenomenon of object-human assemblages may find that pilots, who draw from many years of experience where the objects they use in their networks may be co-present in their consciousness as they use them with reflexivity, and as a result may be more attuned to other objects and people in their network because of the tacit knowledge that has resulted from their experience, not simply through hours of flight time meeting other certification requirements. The knowledge they draw from their object-assemblage relationships during moments when the objects are experienced as co-present/other, affords them opportunities to engage more meaningfully in other aspects of their networks or to other actors in these networks. For example, pilots may notice another pilot who is ill or tired and whose skills are co-present in their conscious focus through the language conveyed through their body. As well, when a pilot is functioning with the objects they use to fly their aircraft as co-present in their conscious mind because they are so familiar with the objects, they may develop relationships with their co-workers that promotes more efficiency and safety by being attuned to their immediate needs or reliance of their strengths in creating a better experience for their passengers. But in many learning situations, the objects adults use to facilitate learning play a secondary role to the acquisition of knowledge that results from interactions with objects. For example, in healthcare networks, the patient’s medical outcome becomes the focus of the network and its actor-practitioners. The medical devices they use exist as practitioner-medical object assemblages, but may not always be a central point of their focus. Nevertheless, in considering the implications for practice, perhaps educating about the assemblage itself is in order for these practices where objects are central.
Implications for Practice and Further Research in Non-Object Centered Settings

There are many adult education settings where objects are a part of the learning environment, but not necessarily the center of the learning itself, in both nonformal and formal learning settings. For example, object-learner assemblages can be found throughout many healthcare settings as diagnostic equipment and other tools used to assess the health of patients is a central part of their networks. An example can be seen in an experienced nurses’ tacit use of the objects used to assess a patients’ blood pressure. The clinical equipment-practitioner assemblage that develops as a result of their reflexivity in using their equipment may afford them the opportunity to be more attentive to interpreting the patients’ present emotional state through their body gestures which may suggest the stress level during the diagnostic procedure. This phenomenon, however, needs to be explored through further research, but the significance of the practitioners’ reflexivity with the medical equipment they use can bring changes to the patient’s experiences by promoting an embodied back and forth flow of information between them which results in shaping the perceptions of the practitioner as well as the patient. The result of the development of a clinical equipment-practitioner assemblage may significantly change the patient’s perceptions of their health network or their feeling of care and empathy given by the practitioner. The interconnectivity that results from the back-and-forth silent dialogue between patient and practitioner may not be apparent during moments when a practitioner is unfamiliar with the use of their equipment or is experiencing their tools as present due to personal or mechanical concerns.

But as the objects the medical practitioners use with great familiarity such as a surgeon would use a scalpel to perform an operation, or a nurse would administer a subcutaneous injection to deliver drugs to patients under their care, the reflexivity with which they use their instruments leads them to an ability to function with them as if they were co-present with their consciousness. As a result, they may be more attuned to the needs of their patients or other medical practitioners
who assist them. This interconnectivity to other aspects of their networks emerges from their embodied knowledge of the uses of the tools they use in medicine, and is another potential opportunity for further empirical research. Learning to develop and create embodied awareness of a patients’ inability to verbally articulate their medical problems would bring added value to how practitioners diagnose medical concerns with the technological tools used in assessing human disease or dysfunction. Alternatively, team members may also be unconsciously aware of the needs of another team member when the objects they use in their practice are used with reflexivity. Their reflexive skills enable them to notice the subtle changes in the body language of a team member that is in physical or emotional need which may ultimately affect patient outcome.

The phenomenon of object-practitioner assemblage invites the opportunity to investigate whether healthcare team members as individuals bring reflexive knowledge with the objects they use in their practice. It also has implications for whether, as part of their social network, their reflexive use of the tools they use allows them to be aware of the implicit body language of their other team members with whom they regularly practice their healthcare skills within their medical networks, or to the patients for whom they provide treatment and care. As a practitioner-team member assemblage, knowledge of other team members or practices invites other team members’ awareness if they are not functioning well during a medical procedure, or if another member may be in need of help. The same can be said about a practitioner-patient assemblage in which healthcare workers’ focus shifts from the equipment they use in treatment and diagnosis of human dis-homeostasis or the data they collect from these objects to awareness of the language and gestures conveyed through the body language of the patient. Fostering more awareness of the value object-assemblages of practitioners within the field of medicine may lead to promoting more social interaction within all aspects of the networks where their practices unfold. The result may be better patient quality healthcare through such assemblages that promotes social
engagement and perhaps valuable relationships that create opportunities to form new bonds to their healthcare practitioners through their networks. The Gestalt effect which arises from object-assemblages is evident in other practically-based learning networks, but may not be central to the way adults learn in these networks. Objects in learning are also central to areas such as classroom settings which use technology.

Classroom environments are also places where objects are often not central to adult learning, but may impart an important influence where acquisition of knowledge is the primary focus. For example, the models that are used in human anatomy and physiology laboratories are objects that are considered part of the way adult learners acquire knowledge of human anatomy. I personally have witnessed students who have spent hours of time mastering their knowledge of the anatomical landmarks on the models in our laboratory. I have observed them collaborating in the co-construction of knowledge with other students to master learning where the model is part of the process that leads to their acquisition of knowledge. With further exploration, the model, as an object, may be an important way students construct embodied knowledge collectively with others that results in them developing proficient knowledge of the landmarks and locations of the human body. The students may develop and embody reflexivity through their hands that results in knowing the important landmarks of the model of a human arm for example. That may lead to opportunities to engage and co-construct new knowledge with their classmates. I have observed students point without looking at the specific muscle on the model as they simultaneously look for validation from those with whom they collaborate. Another example where objects are not the central focus to adult learning can be seen through the performing arts such as music.

There are several other examples where additional research may find the relationship of objects and learners described as an assemblage. Musicians’ have tacit knowledge of their instruments and often know by feel and position of their limbs where notes on their keyboard or strings are located. Their knowledge of music and of the workings of their instrument in this case,
is the central focus of their learning, and through the embodied reflexive knowledge they gain through their learning, new opportunities may arise that allow them to make deeper connections in relating to playing their instrument with other musicians or even to audience members.

Digital devices that bring new technologies into the classroom learning environment can be viewed as supportive objects where learning is the key focus in these environments. Cellular telephones for example, with the development of Smartphone technologies, can be used to help students engage with learning by allowing them to connect to digital environments that personalize and enhance their understanding of curricular learning goals. Educators should not only be aware of digital device-learner assemblages in order to facilitate learning, but also to objects which are central to the acquisition of the knowledge of their users. When students’ motor skills become reflexive and when the tasks they perform using these devices are co-present in their consciousness, they become part of their body schema providing them with an ability to connect to other aspects of their learning networks. Familiar objects that are not the central focus of our intentions but which we use on a daily basis may also be used with reflexivity like coins, cellphones, and writing devices such as pens and pencils. They may not always function as a central part our learning experiences, but when they are, the user who has developed an assemblage with these objects can perform other tasks or focus on other actors in their networks. What remains to be discovered, however, is if a relationship exists between individuals who have a well-developed object-human assemblage with an object and their functional level of expertise in the network where the objects are used.

Motor learning reflexivity which results in object-human assemblages changes the way adults learn when the object that is used is a way that is not central to their meaning-making experiences in the networks where their learning takes place. In practical applications, the reflexivity that develops among learners allows them to be more aware of other elements and
people who are part of their networks. The role and the importance of the human body in creating object-human assemblages arises from the philosophy of Merleau-Ponty (1962).

One of the aspects of shared learning that emerges in adults who are part of the networks where object-assemblages are evident but are not the primary focus of learning, is how objects help establish a sense of interconnectivity with learning and to other learners. For example, the non-discursive language articulated through gestures of the human body that results from our interactions with objects brings opportunities for using them as evidence for learning. Educators who use objects as part of student-focused learning initiatives may not only benefit by bringing awareness to their students’ non-discursive, embodied gestures in group settings, but also create opportunities to facilitate them as part of the development of their curriculum. For example, by acknowledging the role of the learner’s body in group learning settings with student-object assemblages, educators’ curricular designs can be developed with learning outcomes which help students zig-zag back and forth between the knowledge they bring through their bodies intuitively, and to the knowledge that is the focus of their pedagogical instruction (Gendlin, 1995). The result is a less ego-centric formal learning environment which relies only on individual students’ conscious thinking and reflection of their learning goals. The integrative effect of a combined approach to learning through the body and the mind may result in more harmonious student-student relationships and perhaps even student-educatory relationships. In the next several paragraphs I circle back to the focus of this research, which is the way adult learners change as a result of their relationships with objects and to the primacy of learning through the body, and when viewed from an adult education theoretical perspective, it brings broader implications to adult learning practice in several ways.

Through their embodied experiences on their bicycles, all of the participants in this study experienced changes to their individual identities that arose as a direct result of their reflexive motor learning knowledge which resulted in a symbiotic relationship with their bicycles. Dant
(2004) describes motor reflexivity as a fusion of learner to experience in his description of a co-joined entity. Objects used in learning are more than mere “affordances”, they exist differently than they do as separate entities (p. 74). This study found that athletes’ co-constructed experiences of racing with others in their cycling network resulted from their object-learner assemblages and promoted feelings of freedom, and confidence resulting in changes to their overall health and to their emotional well-being.

The silent language conveyed through the corporeality of the human body that is articulated to others who are part of their networks originates deep within us and mirrors our lifelong perceptions and experiences. Much of this language originates instinctually as part of our genetic code. For example, Porges (2011) asserts that changes in human physiological peripheral states result in changes to our perceptions of the world. Our body and our brain are linked together through our autonomic nervous system and are part of our SES. For example, sensing danger, can alter human interpersonal social behavior and be better understood to be “biobehavioral” in origin than psychological (Porges, 2011, p. 257). When an adult is part of a learning network of other learners where object-assemblages are central to their learning, and senses a threat from a team member, the result may be that its effect stalls or stops the perceived embodiment of connectivity in the individual who experiences the threat, and perhaps may impart an effect on other members of the group. Learners may experience this event as impeding their perception of the flow to their interconnectivity with others. In essence, the object becomes more present to their consciousness. Conversely, when people share positive, strong emotional moments together where their activity is centered around body movement such as through immersive sports, it is evident from the results of the findings of this study, they help integrate the members of the group together and create interpersonal bonds such as through camaraderie, unity and even through shared spiritual experiences. Creating more opportunities to meaningfully engage socially with those around us begins by reclaiming the important way the body points to
learning in its corporeal sense. The body is an important pathway to the acquisition of knowledge by the way it is able to spontaneously respond to the actions of others and to the world of things that surround our everyday experiences in life. The how and why it is so should be given more attention in practice based settings.

**Limitations and Recommendations for Future Research**

The implications for theory and practice discussed above implicitly offer suggestions for further research. But these suggestions need to be made in light of a consideration of the limitations and strengths of this study. As the primary instrument of this study, and as a bicycle racer myself certain biases may have been unintentionally introduced which may have shaped the resulting findings of this research. For this reason, the autoethnographic component of this study was in part included not only as a means to expose these personal biases, but as relevant means of inquiry through which the researcher provides a context for them. However, the autoethnographic component can also be seen as a point of strength with this study, not as a means of expression, but as a valid form of research. A research analysis employing the use of autoethnography “displays multiple layers of consciousness connecting the personal to the cultural” (Ellis & Bochner, 2000, p. 739). Through the use of autoethnography as part of this study’s combined approach to inquiry with narrative analysis, I was able to explore the meaning-making experiences I had racing as an “insider” to my cycling community as it intersected with the experiences of the study’s participants and to the unique sub-culture of road racing. Research perspectives from both insiders and outsiders are valuable to the development of approaches to research and to its analysis. The perspective of an insider, or someone who belongs to the community that is being studied, is beneficial to a study as they may ask questions of participants that present a clearer picture of what is being studied. Outsiders, or people who are not members
of the culture they are investigating, add value by asking questions that insiders may overlook due to their familiarity with the culture they are studying. In reality, including both insider-outsider perspectives may present a clearer picture of what is being investigated; hence being an insider is both a strength and a limitation of the study.

There are other limitations in this study. Because qualitative research explores the particular in depth, the findings are not meant to be generalizable. This study was limited in its methodological approach of interviewing only six participants through 12 in-depth interviews, where increasing the scope of this study by interviewing more cyclists, or doing a quantitative survey could possibly glean different and more generalizable insights, it would have sacrificed the in-depth insights offered through the deep look at the biker/bicycle assemblage in a network. There are also gender-based implications that arose from this study that need to be further researched. For example, only the women participants who were interviewed in this study mentioned the importance of their team to their racing success and in their experiences with community support. Furthermore, as this study examined the bicycle as an object used in leisure sports as it intersects with adult education Embodied Learning Theory, the findings of this study may not be congruent with how objects shape the learning experiences of other athletes. This could be however, the object of further study for other researchers. This is one suggestion for further research.

Although narrative inquiry and autoethnography employed in this study as a combined qualitative approach exposed the depth and uniqueness of the racers’ learning experiences as well as my own, the study was informed by a particular theoretical orientation – Actor Network Theory in combination with insights from Embodied Adult Learning Theory and Merleau-Ponty’s philosophy of the body. As such, the data analysis of the study was conducted with this theoretical orientation in mind. The research approach of this study also employed steps to maintain trustworthiness of data analysis. It is possible, however, that other researchers may
produce different findings as a result of their own coding procedures and as a result of the theoretical framework that informs their studies. But this also presents an opportunity for further research – to do a similar study but with a different theoretical orientation.

Data interpretation could also be a limitation of this study as it is affected by my experiences as a road racer, my personal history and world views as discussed in Chapter Two. These limitations could be resolved in future studies from other areas of the United States or other countries. The studies could also be done by partnering with another researcher who may be an “outsider” or over longer time periods. Outsiders may code data differently or provide a unique perspective to the analysis of such a study’s data.

While this study confirms that amateur bicycle racers individual and social identities are shaped by their bicycle and has led them to discover new social networks, what remains to be discovered is how the embodiment of both positive and negative physiological or emotional experiences of athletes translates to success in their leisure sporting activities. Several participants used pain as an indicator to recall that they had pushed hard in training or racing on the previous day. Other participants had clear interpretations for pain and suffering as being positive and negative experiences; as indicators of building strength and a sign of possible impeding long-lasting injury. An area of future research related to this area might make use of a mixed-method approach by quantifying the perception of pain among cyclists in combination with a qualitative approach which focuses on investigating the phenomenon of athletes’ personal experiences with self-imposed pain and suffering. An additional opportunity for future research lies in examining how cyclists’ co-construct meaning making experiences in the unique places where they race and train. The interview data suggests that the places where cyclists’ meaning-making experiences unfold are an important element to the context to their shared experiences with their teammates. The learner’s perceptions of the places they raced and trained were important elements of their stories and through re-visiting them in their memories, they were able to recall many of their
shared experiences with other cyclists. Brymer and Gray (2009) for example, have found that outdoor spaces help athletes facilitate meaningful connections with their identities. Expanding the current research through a study which focuses primarily in how the context of their sporting environments facilitates athletes embodied co-constructed experiences in sport may reveal the importance of how places shape adult learning. Several other questions arise from this study that relate to ANT. Although this study did not employ an analysis of power structure among the community of amateur bicycle racers interviewed, which is common in studies employing an ANT framework, such a study may produce valuable findings. For example, is the power structure of cyclists in a moving peloton dynamic and change as a result of racers’ positions? Or, what is the effect of team dynamics such as blocking and drafting on unattached racers? Future studies which focus more on the role of power dynamic situations that bring changes to the relationships actors and actants have in their networks, for example may invite opportunities to ask how and why questions regarding the agency that arises from these relationships.

If additive elements emerge as a result of actor-actant relationships within the networks where they are found, such as can be seen in object-learner assemblages, does the symbiotic fusion of the actor-actant shift the manner it brings agency to the network through its being a united entity? For example, are athletes like soccer players better able to focus on ignoring feelings of pain and suffering during their games due to the player-ball assemblage they have developed? Are medical professionals who have developed assemblages with their diagnostic or surgical equipment able to problem-solve more efficiently or more creatively in their jobs? A need exists to ask how and why questions about the ways that actors and actants produce new and emergent effects on their networks as actor-actant assemblages. These questions would allow us to probe deeper into the dynamics of actor-actant assemblages and their relationships within their networks. Drawing from Kerr’s (2016) sentiment of how humans are transformed by their
relationships with the objects they use in sport, neither the cyclist nor the bicycle is capable on their own what the rider-bicycle accomplishes as a fused assemblage.

**Autoethnography Revisited and Concluding Thoughts**

I received a text message from a close cycling friend as I was writing the final paragraph of this dissertation. I hadn’t seen Ben for several years. Ben and I were both teachers, friends and cycling training partners. But Ben left teaching to become a firefighter for The City of Baltimore, MD. Ben and I raced for several years together both on the road and track. He asked me if I had been at any of the big, weekly-held Sunday Rides. My response was “yes, emotionally, but not physically.” I sighed when I read his text, because although I have learned so much about my own experiences in cycling through this research opportunity, my body has lost so much of the physical fitness I had developed as a racer through my immersion with this project. As a result, I have also lost most of my connections to the local cycling community by writing instead of riding over the last four and one-half years. In essence, I have become dis-assembled from my cycling community by shifting my focus to this important step in my personal and professional development. But, alas, I have gained such a new and wonderful perspective from so many of the things that I have learned through this doctoral program and this dissertation endeavor. I have become part of new social networks through both online and face-to-face learning opportunities in this doctoral program. Through them, I have formed symbiotic thing-learner assemblages within these learning networks that have resulted in my own personal transformation by being part of them. It has been an important opportunity for personal growth in my adulthood. I have developed interconnections with others who have been part of my program. The new friendships and alliances that I have made with others through this journey in learning have changed me. It has been rewarding to have initiated such a huge goal in my life and soon see it come to fruition.
as I complete this project. It has also been privilege to have my family, friends, fellow students
and participants in this study lend me their support and time in realizing my goal of completing
my terminal degree in adult education.

I do, however, dearly look forward to the time I will soon spend again riding my bicycle
with regularity and re-insert myself into my cycling community once again to re-discover the way
my body embodies rhythm through movement, connectivity to those with whom I share a love of
cycling and strength and power through physical fitness. Assembled as rider-bike I embody
freedom through the speed we create as a united entity. I get lost in the blur of motion I
experience with my bike and motion too, gets lost in us. Merleau-Ponty (1962) offers further
insight into how this happens describing the motion of a bird in flight as an example of how the
understanding of bird only makes sense in light of its motion in flight…

the bird which flies across my garden is, during the time that it is moving, merely
a grayish power of flight and, generally speaking, we shall see that things are
defined primarily in terms of their ‘behaviour’ not in terms of their static
‘properties.’ It is not I who recognize, in each of the points and instants passed
through, the same bird defined by explicit characteristics, it is the bird in flight
which constitutes the unity of its movement, which changes in its place, it is this
flurry of plumage, still here, which is already there in a kind of ubiquity, like the
comet with its tail (Merleau-Ponty, 1962, p. 275).

It is this important element of Merleau-Ponty’s philosophy that is now part of me through
the learning that has changed me and my world. My bicycle and I are not separate from each
other as I speed through the corners of a criterium race; we are part of one another and in being
so, I experience motion, time, and the view of the things I see differently than I would standing
on a curb without my bike. I am part of this difference and it is part of me. Science brings us
awareness and understanding through deconstructing things from our world, but there is an added
element of value that emerges from considering things as they exist in unity with the world. We can appreciate the emergent effects of entities that are not separate from each other, but when viewed as interconnected and interrelated, like the blur of motion that emerges from the “grayish” bird in flight Merleau-Ponty (1962) describes, we see, we feel, we perceive the world differently (p. 275).
Figure 1-1: Peloton of Bicycle Racers
Figure 2-1: The Barn Hill on the River Ride
Figure 3-1: Lower Turkey Hill on the River Ride
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Appendix A

Likely Interview Questions

Interview 1 Questions:

1. How long have you been a bicycle racer?

2. Can you tell me a bit about your relationship with the bicycle that you have
   brought with you?

3. How does your bicycle become part of who you are?

4. Can you tell me a little bit about the culture of road racers?

5. Have you made new friendships through your racing experiences?

6. If yes, can you tell me about how your social relationships have changed you?

7. How has your experiences as a road racer been shaped through riding your
   bicycle?

8. Can you tell me about a time when your bicycle brought information to you
   through your body (before you had time to think about it/them?)

9. What changes have you made in your life outside cycling as a result of racing
   your bicycle?

10. How does riding your bicycle make you feel in-tune with your bike?

11. Are there times when you are racing or training when you don’t have to think
    about what you are doing on your bike (If so, elaborate or tell me a story about
    them)?
Between Interviews:

Between the first and second interview, I will ask participants to think about how their racing experience has been shaped through their bicycle as well as through their relationships with the other racers they have raced or trained with. I will do this by asking them to think about their first interview questions while riding (possibly with other cyclists during a training ride where they may discuss their ideas with other riders). I will also ask them to bring artifacts or other personal documents such as their own personal videos of their past races or scrapbooks to their second interview. The artifacts or documents will be used to elicit deeper information about their embodied learning experiences with their bicycle and other with whom they ride or race.

Interview 2 Questions: (2-4 weeks later)

1. How has your identity changed as a result of being an amateur racer?
2. Tell me about a time when you felt “on top of it” on your bike.
3. Have you ever had the sense that it was going to be a bad day on the bike at the start of a ride?
4. When you are wheel-to-wheel going “all out” what sorts of things do you feel?
5. How do you feel when you do really well with other team members in a race?
6. (invite participants to share artifacts or documents if they brought any to the interview) Can you tell me what memories you recall from this (object, document)?
7. How are you different today as a racer or in your job than when you began racing?
8. How has your bicycle shaped how you may be different today than when you began your racing career?

9. Tell me how you may be able to “read” races?

10. Have you had any epiphanies or life-changing experiences as an amateur racer that has made you a different person?
Appendix B

Informed Consent Form for Research

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**EXEMPTION DETERMINATION**

**Date:** July 28, 2017  
**From:** Stephanie Krout, IRB Analyst  
**To:** Jonathan Crothers

<table>
<thead>
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<th>Type of Submission:</th>
<th>Initial Study</th>
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<tr>
<td>Title of Study:</td>
<td>Investigating Embodied Learning in Adult Education: The Rider-Bike Assemblage of Amateur Bicycle Racers</td>
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<tr>
<td>Principal Investigator:</td>
<td>Jonathan Crothers</td>
</tr>
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</table>

Documents Approved:  
- HRP 591_Jonathan Crothers (v2) (2), Category: IRB Protocol  
- Jonathan_C_Study Interview Qs (1), Category: Data Collection Instrument

The Office for Research Protections determined that the proposed activity, as described in the above-referenced submission, does not require formal IRB review because the research met the criteria for exempt research according to the policies of this institution and the provisions of applicable federal regulations.

Continuing Progress Reports are **not** required for exempt research. Record of this research determined to be exempt will be maintained for five years from the date of this notification. If your research will continue beyond five years, please contact the Office for Research Protections closer to the determination end date.

Changes to exempt research only need to be submitted to the Office for Research Protections in limited circumstances described in the below-referenced Investigator Manual. If changes are being considered and there are questions about whether IRB review is needed, please contact the Office for Research Protections.

Penn State researchers are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within CATS IRB (http://irb.psu.edu).

This correspondence should be maintained with your records.
HRP-591 - Protocol for Human Subject Research

Protocol Title:
Provide the full title of the study as listed in item 1 on the "Basic Information" page in CATS IRB (http://irb.psu.edu).

Investigating Embodied Learning in Adult Education: The Rider-Bike Assemblage of Amateur Bicycle Racers

Principal Investigator:
Name: Jonathan A. Crothers
Department: Behavioral Sciences: Adult Education
Telephone: 717-575-4616
E-mail Address: jac771@psu.edu

Version Date: 2017
Provide the date of this submission. This date must be updated each time the submission is provided to the IRB office with revisions.

July 25, 2017

Clinicaltrials.gov Registration #:
Provide the registration number for this study, if applicable.

Not applicable

Important Instructions for Using This Protocol Template:
1. Add this completed protocol template to your study in CATS IRB (http://irb.psu.edu) on the "Basic Information" page, item 7.
2. This template is provided to help investigators prepare a protocol that includes the necessary information needed by the IRB to determine whether a study meets all applicable criteria for approval.
3. Type your protocol responses below the gray instructional boxes of guidance language. If the section or item is not applicable, indicate not applicable.
4. For research being conducted at Penn State Hershey or by Penn State Hershey researchers only, delete the instructional boxes from the final version of the protocol prior to upload to CATS IRB (http://irb.psu.edu). For all other research, do not delete the instructional boxes from the final version of the protocol.
5. When making revisions to this protocol as requested by the IRB, please follow the instructions outlined in the Study Submission Guide available in the Help Center in CATS IRB (http://irb.psu.edu) for using track changes.

If you need help...

University Park and other campuses:
Office for Research Protections-Human Research Protection Program
The 330 Building, Suite 205
University Park, PA 16802-7014
Phone: 814-865-1775
Fax: 814-863-8699
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