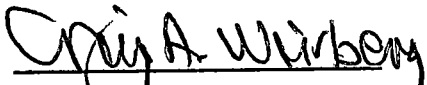
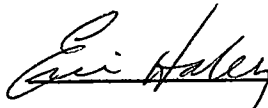
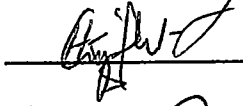


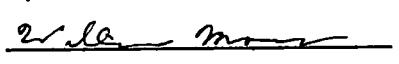
To the Graduate Council:

I am submitting herewith a dissertation written by Ted M. Butryn entitled "Posthuman Horizons: The Technological Life History Narratives of Elite Track and Field Athletes." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.


Craig A. Wrisberg, Major Professor

We have read this dissertation
and recommend its acceptance:



Accepted for the Council:


Interim Vice Provost and
Dean of the Graduate School

POSTHUMAN PODIUMS THE TECHNOLOGICAL LIFE-HISTORY NARRATIVES
OF ELITE TRACK AND FIELD ATHLETES

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Ted M Butryn
December 2000

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DEDICATION

This dissertation is dedicated to three individuals

Donna J Haraway, who taught me that the boundaries between humans and machines
were made to be blurred.

Stuart Hall, and his idea that academics should strive to become “organic intellectuals”

The venerable sport sociologist George Sage, and his notion that we should all dare to be
agents of social change

ACKNOWLEDGMENTS

I would like to take this opportunity to express my appreciation to several individuals whose help and support were invaluable during the process of writing this dissertation. Without them, the study you sit poised to read would probably not exist.

First, I would like to thank my dissertation chair, advisor, mentor, and friend, Dr. Craig Wrisberg. For over a decade, he has aided my academic and personal development in countless ways, and it was because of his openness and flexibility that I was able to confidently move beyond the borders of sport psychology and into other disciplines.

I would like to acknowledge the members of my doctoral committee for their numerous contributions to this dissertation. I thank Dr. Bill Morgan for his help throughout my doctoral work, and for always making himself available to discuss various ideas, many of which ended up in this dissertation in one form or another. I am also grateful to Dr. Joy DeSensi for her help and support throughout this endeavor and for being there whenever I needed to talk through my numerous academic projects. For teaching me that qualitative methodologies involve no less than different ways of revealing the multiplicity of human experiences and lived realities, I thank Dr. Eric Haley. I reserve a final acknowledgement for Dr. Handel Wright, who introduced me to cultural studies in a way that inspired me to take up the challenge of integrating many of its concepts into virtually every aspect of my academic and personal life. I cannot imagine where I would be now had I not “found” cultural studies.

I would like to give a “shout out” to several friends and colleagues who offered their help and support during various phases of this project. I owe a great debt of gratitude to

Matt Masucci, who listened to all of my cyborgian ideas and offered critical and insightful feedback on many of my writings, including some of the narrative texts in this dissertation. In addition, I acknowledge Joe “mad scientist” Whitney for conducting my bracketing interview, and Pete Hager for sitting quietly at the Golden Roast while I consumed massive amounts of coffee and babbled about the technologization of the universe.

Finally, I would be remiss if I failed to acknowledge the contributions that my parents, Ted and Holly, made throughout my academic career, and for the unwavering confidence they had in their son’s abilities. How I got where I am today I will never know, but I am certain that they played a crucial role in my becoming--I still have trouble writing it--a

Ph D

ABSTRACT

Narrative research has emerged as a powerful means of exploring athletes' lives through the stories they tell about themselves (Duncan, 1998, Foley, 1992, McDonald & Birrell, 1999, Sparkes, 1999, 2000). In this study I examined the technological life-histories of seven elite track and field athletes using a narrative analysis (Polkinghorne, 1997). As Haraway (1985) points out, the "cyborg era" has ushered in multiple modes of subjectivity which are best understood through narratives, the stories we tell within the context of an early 21st century technoculture. Through an analysis of in-depth interviews, observational data, personal photographs, and the application of theoretical concepts related to technology, participants' stories were configured into narrative texts that represent individualized literary portraits of the ways that their lives have been "technologically textured" (Ihde, 1993) since childhood.

The narratives presented in this study illustrate the interpenetration of athletes and technology, and trace the formation and reformation of athletic identities that are informed by and shaped through lifelong encounters with technology. Further, the texts relate to the inherent tensions within the community of Olympic-caliber track and field, in which athletes are driven to employ various technologies in their efforts to perform, yet simultaneously strictly regulated in terms of what they can and cannot use by various governing agencies.

The stories participants told generally indicated an appreciation of the role of technology in their sport, but a reluctance to engage with certain technologies that they felt might compromise their own sense of athletic "purity." Thus, while they were

generally complicit in the maintenance of what I will call “hegemonic humanness,” they also demonstrated varying levels of resistance that were contingent on context and their unique life experiences both within and outside of sport. Finally, I hoped that by participating in this study and helping to co-construct their narratives, these athletes would feel compelled to engage in critical dialogues with other competitors and administrators regarding the current and future role of technology in track and field, and how the decision-making process related to the use or restriction of technologies might become more democratic.

PREFACE

Introduction

You, the reader, are about to begin a text whose collective pages represent the culmination of two years of my existence. Moreover, the world of elite athletes, technologies, cyborgs, and stories you sit poised to enter is intimately tied to my personal epistemological journeys through the complex academic and athletic terrain in which I have negotiated my own engagements with technology. Further, the seven narratives presented in this study are ultimately the product of a series of intimate interactions between the participants and myself. For these reasons, it is important that you receive a brief tutorial on how my academic, athletic, technological, and socio-political experiences and identities have directed this dissertation.

Thinking back on my own life, from my middle-class childhood in a small city south of Buffalo, New York to my current residence in the heart of northern California's Silicon Valley, I find that technology is not simply an accessory to the stories I tell, but a central, if sometimes unassuming, component to virtually every aspect of my life. Even events that seem obviously removed from the endless blips and buzzes so characteristic of an expanding American technoculture are ultimately revealed as merely illusions of disconnection.

When I was only several months old, my parents placed me in the Jolly Jumper, a springy contraption that supported my tiny body as I bounced up and down in the doorway. It was my neonate cockpit, and while it was probably not what we would consider technological today, it was my earliest corporeal interface with a device that

augmented my own abilities (My mother attributes my running success to the Jolly Jumper, something I find rather suspect)

I think the first time I was conscious of technology was through interacting with my Atari-2600 video game system Interestingly, I am not even sure if I considered the TV as technological *until* we had the Atari It was as if our television had been transformed somehow because it now enabled me to play Space Invaders, and strain every muscle in my hand frantically maneuvering the joystick to prevent the monsters from landing on my planet I was an extension of the joystick, and I can remember lurching to the side and ducking as though I were the last remaining resistance fighter in the universe Technology was, in a sense, a way to extend my corporeality into the digital world, much as reading Tolkien's fantasy series The Lord of the Rings allowed me to extend my psyche into the depths of Middle Earth

Thinking about Atari reminded me of another early computerized game called Simon, in which players attempted to mimic the sequence of four different colored lights, each of which had its own small pad So, if the sequence went Red, Red, Green, Blue, Yellow, Red, you were expected to press the pads in that order I distinctly remember the sound, a kind of woeful electronic gong, when I failed to punch in the correct order of colors Simon could somehow remember a sequence of 20 or 30 colored lights while I was lost after 10 or 12 if I was lucky It had the appearance of something space-age So, early on there was an aesthetic quality to technology as well My bicycle may have been technological in a way, but to me it was just a bike

One final time when I was aware of electronic kinds of devices growing up was when we got our first VCR, and I remember thinking, “Now *thus* is the latest technology!” Actually, because my family was middle-class (just barely), our VCR was probably outdated by the time we purchased it. Indeed, the knowledge of whom among my friends had what stereo or VCR was very figural throughout my childhood, and class issues related to technology would later emerge as an important part of my academic life.

In general, I was quite ambivalent towards the larger forms of technology present in American society, with the one exception being the explosion of the Space Shuttle Challenger. Although I was only a freshman in high school when that tragic event occurred, I still remember where I was, as well as the news reports on the small “O-rings” that contributed to the accident. My parents did take me to the Buffalo and Toronto science museums on several occasions, but I cannot remember being impressed with the exhibitions that allowed you to touch a lightning ball that made your hair stand up, or the short film on the first years of space travel. It was the simple things like the \$1.50 package of freeze-dried ice cream that the astronauts ate that made me smile.

My early encounters with sport technologies

As I improved as a runner in junior high and high school, I grew to appreciate various kinds of equipment technologies. I remember, for instance, my first watch that had the ability to keep splits, a feature that eventually dictated the pace of my runs. For example, once I knew that it took about 39 minutes for the 5.8 mile route from my home to my grandparents and back, I was obsessed with the promise of breaking my “record” for the course each season. As I got older, then, it seems that technology became associated with

instrumental purposes as well, especially within the context of sport. No longer was it just entertainment, for now my shoes helped prevent my flat feet from pronating and becoming injured. Thus, technology compensated for my biomechanical shortcomings.

I also remember several innovative shoe designs that, for a number of reasons, failed in the marketplace. The Reebok Pump shoe, for instance, had a button that allowed the wearer to regulate the amount of air in the sole of the shoe. There was also a training shoe by Diadora that came with several multi-colored, interchangeable plugs the runner could use to adjust the level of support and cushioning to his or her wishes. Nike even had a racing shoe called the Sockracer that had no laces at all. The Pump seemed superfluous to me, and I would have never considered taking the time to replace the plugs in the Diadora shoe just to have a slightly softer sole. In the case of the ultralight Sockracer, the lack of support precluded all but the most biomechanically efficient athletes from wearing it.

We had no real training room in high school, only an old locker room where the smell of Icy-Hot ointment competed with the mildew for bragging rights. I waited until I got home to take showers, because the white powder that was supposed to prevent athlete's foot hadn't been changed in years. My freshman year, I broke my collarbone going out for a pass during football practice, and I remember Coach Cusimano telling me that it was just a pinched nerve. He took me into the locker room, made what he called a splint out of gauze, sent me to the hospital.

I relied on both high-tech and traditional Eastern healing practices when I had running injuries. Before my senior year of cross-country, I tore my Achilles tendon and was out

of action for five weeks, during which time I received ultrasound and whirlpool treatments in the rehab unit of the local hospital. I remember the whirlpool room vividly because during my sessions I sat next to an English teacher who, the year earlier, had written the following comments on my major term paper. "Ted, you're running far exceeds your writing." Sport and academics, then, were not always complimentary, although I would find a way of reconciling the two later.

Later that fall I had some problems with my hip flexors, and I went to a doctor who was trained in acupuncture. As I discovered, even this form of rehabilitation was infused with modern technology. In traditional acupuncture, a heated stick is placed in contact with the needles embedded in the skin, the idea being that the heat travels down the steel and into the muscle pressure points. This was how my first treatment was performed. Although I cannot remember why, in the second session this method was replaced by a machine that fed an electric current through several leads that attached to the needles. With the flare-like stick, I remember feeling like someone was gradually bringing a match closer and closer to my leg, while the latter technique felt like someone was electrocuting me—just very slowly. Although the experience was different, I was not terribly concerned with which method was used. Device or Druidry—whatever worked.

I did well my senior year, and began attending the University of Tennessee in the fall. My freshman year, all of the distance runners had to participate in a VO2 max test, a procedure that measures the body's ability to carry oxygenated blood to the muscles. When the results were posted, I was disappointed to see that my score was a 70, far above average but still the second lowest on the team. Not only did my inferiority show in

practice, it was right there on the bulletin board in quantified form for everyone to see. In my mind, the test was evidence that I was physiologically lower-class, an oxygen-carrying impotent in relation to my more talented teammates. My VO2 max, measured by machines and represented numerically, defined me, in a sense, and I was quick to divert discussions away from the matter.

While I was engaging with new forms of technological developments, my body itself appeared underdeveloped, and I remember being so proud when I weighed in at 127 pounds (I'm 150 now), several pounds less than I had been in high school. I lived in the athlete's dorm, and every night at dinner I dumped my little plastic baggie of aminos, fat burners and vitamins onto the table, although I never thought about them as forms of technology. As I struggled to adapt to the drastic increase in mileage and intensity, I also began taking three or four Advil every day before practice. In retrospect, I appreciate the irony of being a member of a nationally ranked cross-country team, yet being so sore that I had to take the campus bus to my morning classes!

In a sport sociology class I wrote a paper on blood doping technologies, with a particular emphasis on EPO, a synthetic drug that was just beginning to receive attention from the sporting press. While I understood the effects and potential benefits of the drug, it struck me as something that was exclusively for elite competitors, and I remember thinking that I would not have taken it even if it were available. My nightly pills were enough. Interestingly, the fact that the use of banned performance-enhancing drugs was considered "cheating" was not a focus of the paper. Further, although I remember talking about the members of a European cycling team who had died after ingesting EPO, I was

more concerned with the factors that drove athletes to use such substances in the first place

Several other experiences with technology in my running career stand out. I often dreaded track workouts because my feet were prone to painful blisters. After practice, I would gingerly remove my spikes to discover that my socks were bloody because the Moleskin, a gellatinous substance that buffered my heel from the shoe, had come off.

I also have vivid memories of our track disintegrating, melting really, and the green rubber staining our shorts as we stretched before practice on hot days. The following year, I wrote a proposal for a new track and additional facilities in an English course. While the purpose of the assignment was to improve my compositional and technical writing skills, I went into some detail on technologies such as track surfaces and digital scoreboards. These technologies were directly related, I argued, to enhanced performance, and I recall my coach describing how a \$500,000 state of the art Mondo surface would provide Tennessee's runners with an added advantage.

While I enjoyed my athletic life, there was little time or energy to engage in other extracurricular activities, something I always envied about the campus lives of non-athletes. During the Persian Gulf War, our head coach even instructed my teammates and I to keep out of the impending fray on campus because, he warned, "They'll always come down on the athletes." This may or may not have been true, but I remember feeling uneasy that my sense of agency and personal politics (such as they were at the time) were being undermined by my coach. As it turned out, that night thousands of students marched on the International House, (which housed no Iraqi or Kuwaiti students), and

chanted “Arabs go home!” and other pro-American and xenophobic slogans. Meanwhile, a small band of 200 or so people, many of whom would later become close friends, held a peace rally filled with cries of “No blood for oil!” This event marked the first time that I can remember feeling “critical” about anything worldly, and I will never forget watching the footage on CNN from the apolitical bunker of my apartment. In retrospect, it was this silencing of my personal expression that prompted me to take a keener interest in politics and explore my own feelings towards various social issues, sport-related and otherwise.

Transitions: From running fanatic to eco-warrior

Running continued to improve steadily throughout my first two years, and by the end of my sophomore season I had set a minute and a half personal best in the 10,000 meters, and proven that I belonged at a Division I program. I was excited about the prospects of the next season, and while I had begun to follow politics, I was certainly no Che Guevara.

A major life change occurred, however, when my body gave out in the opening few weeks of my third season, just as I was solidifying my position as one of the top runners. My quadricep muscles were both suffering from acute pain, but the main problem was a nasty case of plantar fasciitis in my left foot. I began treating it with every technological and non-technological means I had access to, and the doctor simply told me to keep stretching and take time off. Eventually, when the option of receiving cortisone injections was offered, I accepted wholeheartedly. I received several injections, but each alleviated the pain for shorter and shorter periods of time. After the second round of treatment the doctor refused to give me another shot because of the risk of permanent tissue damage. Although I understood the side effects of the drug, my sense of self-

efficacy was strongly tied to my ability to continue improving. So, I sought the services of a doctor external to the athletic department and received one final dose of cortisone. Two weeks later the tendon in my foot snapped in half, effectively ending my college career. I had used myself as a Guinea pig, and the experiment had failed.

When I began triathlon training the year following my final injury, I quickly fell into the same pattern of “needing” the best (and in my case affordable) technologies, even though I had no real aspirations of becoming a superior athlete in that sport. First, I bought the newest pair of streamline goggles that were guaranteed to be fog-proof. Keep in mind that I could not even do flip turns! Next, I bought a mini odometer-computer for my bike so that I could keep track of vital statistics like my maximum and average speeds during my rides. Keep in mind that I never rode over 20 miles. At the time I was convinced that it was just myself and my bike against the elements, and yet in retrospect I was, perhaps unconsciously, seeking out the most technological means available to monitor and improve my training efficiency.

There were limits to how far I could take my engagement with technology, however. For instance, I could not afford clipless pedals, so I had to use the awkward cloth straps that often slid back and forth as I pedaled up hills. I don’t think I ever felt any sort of oneness with my machine. Ironically, the shoe straps forced me to remain connected with my bike at the most inopportune times, as was the case when I crashed on the local bike path. Over the handlebars I went, and as if hitting the wet pavement were not enough, a split second later my feet flung around, propelling the bike on top of me. As the title of a recent book declares, “Technology bites back” (Tenner, 1996). A few weeks

later, I was riding through an intersection when my computer, which had come loose, fell off onto the road. I turned around just in time to see it run over several times in succession—the demolition of quantification. That was the end of my attempt to become proficient at cycling.

While I was still distraught over not being on the track team, I did have more time to extend my college experiences outside the realm of athletics. Eventually, I found myself at the inaugural meeting of a campus environmental group. Over the course of the next year and a half I immersed myself in various earthy endeavors. I took to parading around campus every Tuesday in a radiation suit to raise attention to “corporate polluters,” and I even protested the local McDonalds over the chain’s resistance to putting vegetarian items on the menu (I have since learned the art of subtlety). Interestingly, my entrance into the animal rights movement was not inspired by my patchouli-drenched compatriots, but by discussions in a philosophy of sport class that subsequently prompted me to read Singer’s classic book, Animal Ethics.

Popular culture also played a role in this new politicized outlook. Musically, 1991-1992 was the year of Nirvana and “grunge,” both of which came to represent (predominately) white angst with at least some semblance of social consciousness. Films affected me as well, and through a combination of old (e.g. *Easy Rider*) and new (e.g. *The Panama Deception*) I learned to question the authority of those in power in every sphere of society. While this may seem somewhat trite, keep in mind that I was still an athlete in the early stages of detaching myself from the conservative institutional confines of intercollegiate sport.

My daily lifestyle, academics, and social activism soon became completely intertwined, and to some extent I was on the verge of doing cultural studies five years before I even knew the difference between Stuart Hall and Annie Hall. There I sat, outside on an old stump, reading books on Green Socialism and openly advocating the end of technological imperialism. I once even threw my stopwatch over a waterfall in the Smoky Mountains, and as I watched it swept away I fancied myself as having erased that part of my socialization that prompted me to constantly monitor the time it took to do whatever task I was doing. Though I did not know it at the time, however, I was also creating in my mind a rift between nature and technology that would only later be bridged.

During my final semester, I wrote my undergraduate thesis on the possibilities of incorporating the tenets of eco-psychology with sport psychology. In this rather irreverent culmination to my undergraduate career I described how humans have lost touch with the “natural” world from which we evolved. As a result of this proposed separation, I argued that we have experienced a decline in mental health which, not coincidentally, has corresponded with the continued degradation of the environment. Psychological illness and ozone depletion were thus intimately linked (Roszak, 1993). As a solution to this schism between the human psyche and the “wild” outdoors, I suggested that an enhancement of both environmental consciousness and physical activities conducted outdoors might yield a new paradigm of eco-sport psychology, and a more holistic sporting practice. As part of the study, I interviewed two world class athletes, two-time U S Olympic distance runner Todd Williams and five-time Ironman

triathlon winner Mark Allen Allen was known for his affinity for the Hawaiian Islands, and he regularly paid his respects to the local gods both before and during the race In contrast, Todd described his experience of running as simply “going to the office” In my estimation, these athletes were worlds apart Allen was to be my example of a world-class athlete who demonstrated the type of eco-holism I was advocating, while Todd’s instrumental approach was, I argued, symptomatic of a technocentric sport culture

During the course of the interview, however, Allen revealed himself to be far less *cro-magnon* than I had imagined In fact, I distinctly remember being disappointed when he went from talking about how much he loved training outdoors to how business-like his approach to training was, and how he relied on things like the newest aerodynamic handlebars and titanium bikes to give him a competitive edge On the other hand, as my mentor later pointed out, Todd also may have been experiencing some appreciation of his surroundings but unable to articulate it in what I framed as “natural” terms More importantly, this paper forced me to begin questioning the notion that elite athletes could ever be exclusively “natural” or non-technological Moreover, the terms “natural” and “artificial” became frustratingly fuzzy for me

Cyborg reconciliation

When I graduated from the University of Tennessee, a friend and I traveled through almost every National Park west of the Mississippi After four and a half years of being tied to schedules and deadlines, I felt ready to “unplug” prior to undertaking the rigors of a graduate degree program As the summer progressed, however, I found myself attached to, and at times reliant upon, many of the technologies I had so naively sought to escape

Whether it was the Gore-Tex jackets, boots, and tent that sheltered us from the elements we were supposed to be enjoying, or the medium-priced hotels we sought refuge in every two weeks, we finished our 11-week trip without having been anything but superficially removed from American technoculture

Eventually, I allowed myself to see the illusion I had constructed, and while I still enjoyed being “out there in nature,” I began searching for a way to reconcile my love of the wilderness with the inescapability of technology. In retrospect, this paradigmatic shift virtually deflated my ardent environmental and anti-technology stance, something that caused me a great deal of confusion politically. Unfortunately, my means of coping was to withdraw for a period from any political debates that involved either the environment or technology. This public inaction was, however, accompanied by a renewed commitment to sort these issues out academically, and in retrospect I consider the process as a redirection of the same sort of energy.

While completing my masters degree at San Jose State University, I came to understand that there was no sense attempting to recapture any sort of primitive lifestyle in such a profoundly technologized society, especially while my career goals necessitated a degree of engagement with a technologized educational system. So, I turned my attention to how I might argue that technology should not be discarded, but negotiated, as well as to how people perceive and experience various technologies, especially within the context of sport and exercise.

I returned to my academic origins in Tennessee to pursue a Ph.D. degree on the advice of my former mentor, who convinced me that I was well suited to the cultural studies

program in which sport psychology was now housed. In a class on cultural criticism I was introduced to Charles Taylor's (1991) book, The Ethics of Authenticity, in which Taylor details what he considers to be the three major pitfalls of contemporary Western society. First, he points to debased forms of individualism that have transformed the ideal of self-determining freedom into an atomistic and narcissistic practice. Second, Taylor argues that the primacy of instrumental reason, or the tendency to seek out the most efficient means available for any task, has replaced other dialogical forms of decision making. Taylor points to the use of technology as an example of one practice where instrumental reason has taken a strong hold. To further illustrate this notion, he introduces Borgmann's (1984) concept of the device paradigm, which essentially states that we default to the most technological solution to every problem, regardless of whether or not less technological solutions might be better suited. Lastly, Taylor states that, in part because of the prior two malaises, there has been a frightening level of disengagement from public political life, something that may ultimately threaten our freedom. In short, as we retreat to our private worlds we distance ourselves from anything resembling the democratic process.

Taylor's work struck a chord in me, particularly his point about the disintegration of the democratic process that has been furthered by debased forms of individualism. As Taylor (1991) notes, "An individual life is hard to sustain against the grain" (p. 9). In the case of elite sport, the "grain" is closely tied to the performance ethos of sport and the corporate interests that have rewarded success financially. While I was not sure exactly

where this would fit into my future academic projects, I began to think about how these issues related to sport and technology

I had not yet found a way to reconcile “nature” with technology, particularly with respect to sport and physical activity, so I further examined Albert Borgmann’s (1984) text, Technology and the character of contemporary life. In this book, Borgmann proposes de-centralizing the role of technology in our lives through the re-establishment of what he calls “focal practices.” Focal practices, according to Borgmann (1984), provide a rich web of engagements with the world, and he uses the hearth as his primary example of something that provides a place for communion and dialogue.

What troubled me was that Borgmann’s exclusive use of “earthy” activities to illustrate focal practices seemed to preclude the possibility that interfaces between humans and technology could serve a similar function, an idea that I would read later in Leder’s (1988) review of Borgmann’s work. So, in a subsequent class paper I argued that health clubs, with their computerized treadmills and plugged-in, yet social, atmosphere, might serve as focal practices for some American exercisers.

In my attempt to elaborate on the relationship between humans and technology, particularly as it relates to sport, I began reading the work of Donna Haraway (1985) and others in cyborg theory. Through this introduction to the cyborg, I came to the conclusion that sport’s tendency to appeal to the notion of some “pure” or “natural” human athlete was anachronistic, naive, and in many cases unjust, for while athletes are driven to exceed previous standards of excellence, they have little voice in what technological means may be used to do so. Further, I came to understand the notions of

“fractured identities,” and of “blurring the boundaries” between what had been, in my mind, dichotomous constructs. I no longer saw the need to assert my “naturalness” to the complete exclusion of anything technological or “artificial,” or my “humanness” to the exclusion of aspects of my identity that are more animal or machine. In short, I named myself as a cyborg.

Meanwhile, in my other primary area of interest, sport psychology, I had begun consulting with a couple members of the cross-country team, and written a paper on how sport psychology could be viewed as a sort of “cognitive technology” (Butryn, 1999a). Around the same time I also began reading more in the newspapers about the upcoming Olympic Games in Sydney and the controversies over new equipment and implement designs, as well as the efforts by the International Olympic Committee and other organizations to detect the use of performance-enhancing drugs.

Subsequently, I wrote a paper arguing for the reconceptualization of elite athletes as cyborgs, and a movement towards the democratization of the decision-making process regarding the use and restriction of sport technologies. In the two years since I first became interested in sport technologies, there has been an incredible swell of interest in issues related to athletes and the technological innovations that have contributed to enhanced performance. The sports network ESPN recently aired a special on the 21st century athlete, making terms like “cyborg” and “genetically-altered competitor” strangely common terms among the general public. Even the once pastoral sport of baseball is no longer just about RBIs and interleague play, for the controversy surrounding Mark McGwire’s use of “andro,” a performance-enhancing substance

banned in sports like track and field, has raised questions about how many home runs the bulked-up Mark McGwire really hit “himself” The relatively reserved chess community was also shaken when its reigning champion, Gary Kasparov, was beaten by “Deep Blue,” a computer program that had the ability to calculate infinite numbers of possible moves instantly Thus, just as I had to reconcile my “naturalness” with the ways in which technology has shaped my life and identity, I was now moved to ask the crucial question, “What is “human performance?”

Given my affinity for the sport of track and field, as well as the current controversies surrounding various technological innovations used by Olympic athletes, I decided early on that I would limit my dissertation to the study of that sport What I needed to do now was determine how the cyborg material played out in athletes’ experiences I wanted to find a method with which to investigate sport technologies that would not just illuminate the phenomenon, but also the athletes’ interactions with technology Further, I wanted to find a method that would allow the athletes to tell their own stories of technology and, in the process, hopefully help them gain some new insight into their cyborgified selves After taking a course on qualitative inquiry, and conducting two qualitative studies on my own, there was no question that I would rely on the power of qualitative methodologies to obtain rich accounts of athletes’ experiences

After talking with a faculty member with expertise in cultural studies and critical qualitative methodologies, I began reading several texts on critical ethnography While that method was not particularly well-suited for my study, it introduced me to the notion of reflexivity, or the critical interrogation of one’s position throughout the research

process, and it also led me to essays by Polkinghorne (1995, 1997) on life history narrative research. Coincidentally, perhaps, it was about that same time that I read an article in the Sociology of Sport Journal entitled, "Stories we tell about ourselves" by Margaret Carlisle Duncan (1998). This short piece featured several brief narratives of the lives of people in academic and athletic contexts. To investigate the cyborgification of track and field athletes, life history narratives seemed uniquely appropriate, a conclusion I hope you will concur with.

This dissertation project was motivated and guided by the experiences I have just described, and in this sense the text is an offspring, of sorts, of my own cyborg life. I have attempted to situate myself within my own fractured identities as an athlete/academic/activist/cyborg, and to make my own cyborgian transformations explicit. I have come to "name" technology, and to recognize its role in every aspect of my life. I claim authorship of this work, and yet "I", it should now be apparent, is by no means a singular or neutral concept.

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Part I: INTRODUCTION TO THE STUDY

Introduction

At no time in our history has American life been so thoroughly permeated by technology. Paradoxically, it is the omnipresence of technology that has contributed most to our inability to fully grasp the scope and depth of its influence, and our uncertainty as to what role various technological advancements should play in our daily lives. In truth, for many Americans technology seems to be simultaneously omnipresent and invisible, everywhere and nowhere. It is evident in the most mundane aspects of our lives in the form of computers, cell phones, automobiles, contact lenses, and heart medication, and yet it exists as well in the grandest accomplishments of humankind, both giant and microscopic, from space shuttles to the mapping of the human Genome. Even before I was born, technology foretold my sex, size, and state of health, and when I die it will be the straight line and incessant beep that prompts doctors to contact my loved ones. As I sort through the patchwork of memories and experiences that constitute my life, I discover that my interface with technology has been perfectly thorough.

Responses to the question, "So, what do you think about technology?", are almost without exception tinted with frustration and ambivalence. On one hand, it is difficult to argue that technology has not contributed to the betterment of American life, from medical advancements to the information superhighway. As far back as the 17th Century, Francis Bacon believed that a benevolent technology would ultimately yield an enhanced quality of living for all people. In contrast to this techno-utopian perspective, however, we can make a strong case that technology poses a serious threat to human existence. Technology has given us longer lives, convenience, and efficiency, but it has

also yielded weapons of mass destruction, an ability to wipe out vast expanses of rainforests, and a culture from which it is now virtually impossible to “unplug.” In short, the meanings and values we ascribe to technology depend very much on the context in which it is discussed, and the perspectives of those involved in the discussion. This sort of variability has made the topic of technology difficult to address, and there is little consensus about the complex relationship between humans, technology, and American culture.

As the subsequent pages will reveal, technology cannot be captured by a single, unidimensional definition or understood through one theoretical lens. In fact, numerous attempts to define technology have yielded such an array of descriptions that one may be tempted to resign to the idea that technology is manifest in *everything*. It is synonymous with science and rational thought, and encompasses every little gadget we’ve ever held in wonder in our hands. It is the collective machinery that powers American society and the mechanism that allows the computer I am currently hunched over to save the contents of this now sprawling text faster than would ever really be necessary. Of course, technology is not just “out there,” an inanimate presence in the world that, while intimately connected with our everyday lives, maintains a distance from the “human” domain. Indeed, on any given day my bloodstream carries the remnants of ibuprofen and multi-vitamins, and the years of running I have subjected my body to might someday necessitate the instillation of an artificial hip or knee. Further, humans have a way of coming to view themselves in terms of their technological surroundings. In his examination of the tie between technology and human understanding, Ihde (1983) argues

that in order to understand ourselves we must simultaneously acknowledge technology and how we have internalized the ethos of larger technocultures. As cultures become increasingly technologized, we tend to model ourselves after the matrix of technologies around us and interpret ourselves in technological terms (Ihde, 1983). Technologies therefore do not just redefine the world, but our notions of “humanness” and “self” as well. In America, for instance, it is part of the techno-hip aesthetic to walk around with a cell phone and pager, a kind of self-defining urban fashion statement of a technologically literate generation. Another example is seen in questions like, “How many megabytes do you have?” The information-carrying capacity of one’s device becomes an extension of one’s identity and significance.

In recent years, a growing number of researchers from across several disciplines have argued that our “humanness” has been so profoundly altered by more intimate, available, and often unavoidable engagements with technology that humans should be reconceptualized as post-human cyborgs. In her seminal essay “Manifesto for Cyborgs: Science, Technology, and Socialist-Feminism in the 1980s,” Donna Haraway (1985) proposes a destabilization or “pollution” of the boundaries that have been constructed between humans, animals, and machines, a process she considers necessary if citizens of modern technocultures are to reclaim responsibility for the ways their identities are constructed and reconstructed through human-technology interfaces. The 21st century “self” is no longer a singular identity, but an assortment of politicized, technologized, and fractured cyborg “selves.”

While Haraway's (1985) cyborg is a highly theoretical project, others have attempted to describe cyborgs in more tangible, though by no means less potent, terms. For example, while Haraway (1991) argues that all of us are cyborgs in the most general sense because of our connection to national and global technological webs, Hayles (1999) limits her definition to approximately 10% of the U S population, including "people with electronic pacemakers, artificial joints, drug implant systems, implanted corneal lenses, and artificial skin" (p 115). Hayles adds, however, that far more people qualify as cyborgs through less intrusive interfaces with the worldwide cybernetic network, including computer workers, internet surfers, neurosurgeons using fiber-optic microscopy, and people driving cars equipped with global positioning satellite sensors.

There has been a great deal of debate among sport studies scholars over the increasing technologization and cyborgification of sport as well. While John Hoberman (1995) states that athletes who employ the various technological innovations available to them are merely participating in the "spirit of the age" (p 206), sport researchers have offered differing opinions on the prospect of sportive cyborgs. For example, Coakley (1994) warns that what he calls "technosport" is a serious threat to athletic "creativity, freedom, spontaneity, and expression" (p 449). Along these lines, Sage (1998) expresses concern with increased technologization at the expense of athlete safety and autonomy, and states that "high-performance sport has increasingly become a project in human engineering whose objective is producing levels of performance with seemingly little understanding of-or even interest in-what the consequences may be for personal and social development of the athlete" (p 156).

Several other authors have pointed to further problematic aspects of the influx of new sport technologies (Gelberg, 1995, 1998, Hoberman, 1992, 1995, Rintala, 1995, Simon, 1994, Tenner, 1996). Tenner (1996), for example, describes the unintended consequences of new technologies, and how advancements in protective gear and rehabilitation technologies have actually led to increased incidences of chronic, lifelong injuries. Some critics even view technology as contributing to the "dehumanization" of elite athletes (Hoberman, 1992, Rintala, 1995). According to Rintala (1995), sport technologies that threaten what is often termed the "human element" of sport should be resisted, since they undermine that element which has been deemed a constituent part of fair competition in a particular sport. As she states, "to the extent that technologies promote efficient development of an athlete's potential, technologies may be brought to the service of the athlete for his or her self-actualization. However, technology should not be a replacement for the human element, the human should not be the tool for improving technology nor the means through which technological superiority can be demonstrated" (p. 74). Simon (1994) agrees, and argues that the widespread use of various performance-enhancing substances could lead to a situation in which "we eventually may be unable to identify the original 'I' whose performance we wanted to enhance" (p. 150). It must be noted, however, that such arguments presume that an essential self does, in fact, exist, and that the preservation of this "I" outweighs the possibility of more technologized modes of experience.

Though far fewer in number, some researchers have defended the emergence of an unapologetically technologized sport populated by openly cyborgified athletes. These

scholars have proposed a postmodern take on the body whereby individuals would be permitted the freedom to defy the boundary projects of modern sport, particularly those between animals, humans, and machines (Butryn, 1999b, Cole, 1993, 1998, Pronger, 1998), and explore new modes of being through interfacing with the technologies at their disposal. The inclusive nature in which cyborgs are defined has led Gray, et al (1995) to note that "the range of human-machine couplings almost defies definition even existing human cyborgs range from the quadriplegic patient totally dependent on a vast array of high-tech equipment to a small child with one immunization" (p. 4). With respect to sport, the difficulty in pointing to a singular image of a cyborg athlete means that the focus necessarily shifts from discussions over whether or not someone qualifies as a cyborg to questions related to the *degrees* and *forms* of cyborgification. Viewing elite athletes as cyborgs who are inextricably tied to technology helps to alleviate the tension between "natural" and "artificial" athletes and performances, because it carries with it the recognition that elite athletes do not simply enter into competitions as technological *tabula rassa* with no knowledge or experience of high-tech devices and innovations. Rather, athletes have been engaged with and shaped by various technologies since birth (Davis-Floyd & Dumit, 1998).

Holt (1998) also recognizes the changing dynamics of our relationship with sport technologies, and argues that "our sports gear suggests the possibility of corporeal escape—a kind of psychic involvement with something far larger, more powerful, and more perfect than any of us could reasonably hope to be a part of" (p. 5). Put more concretely, sport technologies are not merely tools that athletes engage with and

subsequently discard. Rather, technology often becomes intertwined with the athlete's identity, creating not just technologically enhanced bodies, but technologically informed subjectivities as well. Indeed, we frequently find examples of smooth human-machine interfaces that provide enhanced experiential and performance-based results. The cyclist in perfect rhythm, for example, may feel his or her legs as though they were connected with the machine, while the pole-vaulter may experience her fiberglass implement as an extension of her upper torso as she launches herself towards the bar.

One major battleground for the debates over sport technologies has been the often turbulent culture of international track and field (Tenner, 1996, Zorpette, 2000). Given Ihde's (1993) notion that our lives are "technologically textured for most waking moments," (p. 3) elite track and field athletes appear hopelessly trapped in a paradoxical existence of having to constantly assert and prove their status as "natural" competitors while being simultaneously subjected to the temptations of the various technological innovations available to enhance performance, whether they be lighter implements, rehabilitative devices, or banned substances (Franklin, 1996). The tension between the supposed purity of Olympic caliber athletes and their drive to better existing performance standards is heightened by the fact that track and field competitors, especially those living in wealthier Western nations, inhabit what can easily be considered the center of an expanding global technoculture with its own set of complex values and ideals (Menser & Aronowitz, 1996). Controversies have been slow to resolution, and an unsettling trend has emerged where superior performances are invariably accompanied by questions over how, and to what degree, technology may be implicated in the process. The crucial issue

here relates to Simon's (1994) idea of a singular "T", as well as to the fear that the increasing technologization of track and field will de-skill performances to such an extent that the integrity of the sport will be compromised (Miah, 1999). In short, the worldwide track and field community appears poised at a technological crossroads.

While debates over the role of technology in the sport have been quite heated, athletes' stories have gone largely unheard, except when called upon to defend themselves against some sort of accusation of wrongdoing. While critical theorists and cultural studies researchers working in the area of technology have argued for a move towards democratized, participatory technocultures (Feenberg, 1995, 1999, Menser & Aronowitz, 1996), Olympic-level track and field appears headed in the opposite direction. In the last few years, for example, debates over performance enhancing drugs and testing procedures aimed at catching athletes using banned substances have included not only scientific experts and the governing bodies of U.S. and international track and field, but the United States government as well.

In late 1998, the White House national drug policy director, or "drug czar," General Barry McCaffrey, announced a proposal for the creation of an independent testing agency with unlimited, year-round access to Olympic athletes. His challenge has been met with resistance from the International Olympic Committee, and an agency has yet to be established. In fact, it has been McCaffrey's sometimes militaristic rhetoric, as much as his insistence that the IOC is either unwilling or incapable of policing its athletes, that has prompted Australian officials to ban McCaffrey from entering that country last year. In 1999, for example, McCaffrey stated that there was a "grave danger" in losing

momentum in the formation of an anti-doping committee, and that "I don't think there is going to be a credible drug-testing regime unless it's independent of the IOC and unless it has access to the world's athletes 365 days year" (Brubaker, 1999) Once again, the inherent conflicts between this surveillance of "natural" humanness (Shogan, 1999) and the larger American and global technocultures that challenge any modernist notions of "naturalness" and singular conceptions of "human" identity cannot be overstated

As I have already mentioned, the stories of elite track and field athletes themselves seem conspicuously absent from debates over what technologies do and do not have a place in the sport Because of the increased reliance on so-called "experts" to decipher the complex science and specialized knowledge associated with many technologies, it is arguable that the athletes have been unable, unwilling, or simply not interested in inserting themselves into these debates As well, while track and field and its athletes may be undeniably technologized, Borgmann (1984) suggests that the technologically saturated state of American society makes it difficult to recognize technology even while we are connected to it in every conceivable way Further, it is important to note that the taken-for-grantedness with which technology presents itself in modern technocultures often facilitates its removal from criticism or scrutiny (Borgmann, 1984) Of course, it is also possible that athletes are fully aware of their situation, and are simply content to reap the financial rewards available to the world's best competitors While the reasons for athletes' overall silence regarding technology in track and field are not very clear, it is clear that there has been little attempt on the part of academics to investigate these

athletes interactions with and perceptions of technology, and the ways in which each individual athlete is technologized in unique ways throughout his or her life

Although qualitative research has traditionally occupied a marginalized position within sport studies, there are encouraging signs that modes of inquiry emphasizing subjective accounts of athletes' sport and life experiences are becoming a more widely accepted alternative or complement to quantitative methods (Bain, 1995, Sparkes, 1998; Strean, 1998) Over the past decade, the field of applied sport psychology has slowly realized the ability of qualitative methodologies to illuminate athletes' life and competitive experiences, and some have proposed that existential-phenomenological research has great potential in this area (Dale, 1996, Strean, 1998) Meanwhile, sport sociologists have continued employing symbolic interactionism and other ethnographic methods in their work, and the recent influence of cultural studies within the field has yielded an increasing number of studies featuring the infusion of critical feminist, post-Marxist, and postmodern theories with traditional qualitative methods (Andrews & Loy, 1993)

One limitation of these studies, particularly within sport psychology, is that they have relied almost exclusively on thematic interpretations of qualitative data and the adoption of post-positivistic standards in assessing the academic value of a given piece of research (Sparkes, 1998) The emphasis has often, though not always, been on condensing the experiences of participants into a thematic structure that may then be viewed as a representation of larger populations, a means of data analysis that, while certainly useful in terms of generalizing the findings to larger populations, potentially glosses over the

idiosyncrasies of individual athletes' lives in the process. Further, while most researchers have begun to consider qualitative data as the product of an interaction between the researcher and participant, there has been little effort to detail what the participants obtain from being part of the research process, or how the researcher's voice is represented in the final text (Sparkes, 1995, 1998).

Amid the growing interest in methods of qualitative inquiry within sport studies, narrative research has emerged as a powerful means of examining the lives of athletes through the stories they tell about themselves (Duncan, 1998, Foley, 1992, McDonald & Birrell, 1999, Sparkes, 1999, 2000). In general, narrative inquiry uses participants' stories to describe and interpret human action and experience (Oliver, 1998, Polkinghorne, 1995) and, as a research method, Oliver (1998) states that "narrative analysis is particularly powerful for understanding the fullness and uniqueness of human existence" (p. 247).

Perhaps the most powerful type of narrative research is that which focuses on peoples' life histories (Atkinson, 1988). The telling of one's life story is a means of creating and recreating one's life, and the self-reflection inherent in narratives may provide individuals with new or additional insights into the meaning of their lives (Atkinson, 1998, Denzin, 1989, Nelson, 1997, Polkinghorne, 1995). Narratives can also demonstrate whose voice is heard and whose is muted, and allow individuals whose voices have not been heard to reclaim a sense of agency in their lives through recounting their life histories (Polkinghorne, 1995, Nelson, 1997). Atkinson (1998) elaborates on how life history narratives can prompt dramatic paradigmatic shifts as well.

Sometimes, a story, a personal narrative, may be so unusual, interesting, confirming, or powerful that it may take us someplace new in our understanding that we would not have imagined. A personal story can be like a trail, or a journey, leading us somewhere completely new. Or it could so strongly validate something we already know that it could lead us to a new conclusion about something we were tentative about previously (p. 72-3).

As this quote illustrates, narratives seem particularly well-suited to the task of enabling athletes to tell their stories of self-technologization. For some athletes the telling of their technological life stories may validate the choices they make regarding their present use or refusal of various sport technologies, while others may find their present engagements with technology far removed from their previous life experiences outside of the world of elite track and field.

Purpose of the Study

The main purpose of this study was to examine the technological life histories of seven elite track and field athletes using a narrative analysis (Polkinghorne, 1995). As an approach for understanding individual lives, there may be no better method than life history narratives (Atkinson, 1998). Through an analysis of in-depth interviews, observational data, personal photographs, and the application of various theoretical concepts related to technology, participants' stories were configured into narratives that represent seven individual portraits of the ways that their lives have been "technologically textured" (Ihde, 1993) in unique ways from childhood. While the participants in this study are all subject to the disciplinary powers at work within elite

track and field and the drive to achieve higher levels of performance, their stories and identities remain hybridized because of their experiences as raced, classed, gendered, and technologized individuals (Shogan, 1999)

As Haraway (1991) points out, what she calls the “cyborg era” has ushered in multiple modes of subjectivity which are best understood through narratives, the stories we tell about ourselves within the context of an early 21st century technoculture. Inevitably, the language of technology grafts itself onto metaphors, transforming not only our perceptions and experiences, but the way we express and describe our lives (Downey, Dumit, & Williams, 1995, Ihde, 1993, Macauley & Gordo-Lopez, 1995). These narratives illustrate the interpenetration of athletes and technology, and trace the formation of an athletic identity that is informed and shaped through lifelong encounters with technology.

A secondary purpose of this study relates to the knowledge and agency of the seven participants. Through the telling of their technological life stories, participants have hopefully obtained a better understanding of how and why they have interfaced with technology in particular ways, and from this enhanced self-knowledge be better able to situate their current engagements with technology within the larger historical and socio-cultural context of American technoculture. This insight may also enable participants to better understand how they view their sporting bodies, and shed additional light on their means of technologizing their bodies and their rationales for doing so. Also, a better understanding of their lifelong engagements with technology will hopefully inspire

participants in this study to engage in more fruitful dialogues with other athletes and administrators regarding the current and future role of technology in elite track and field

Definition of Terms

Technoculture A term used to describe the notion that technology is implicated in all aspects of modern culture, particularly western cultures. The daily lives of people inhabiting these various cultures are so intimately tied to technology that to imagine many cultural practices without technology is impossible (Menser & Aronowitz, 1996)

Life History Narrative A qualitative method that traces the connection of an individual's life events to socio-cultural contexts (Hatch & Wisniewski, 1995). The narrative text is a product of the life history interview, as well as other forms of data, including photographs, observations, and the application of theory (Hatch & Wisniewski, 1995, Polkinghorne, 1995, 1997)

Narrative Configuration The procedure through which the researcher configures the data along a plotline that yields a coherent account of the participant's actions (Polkinghorne, 1995)

Elite Athlete For this study, an elite track and field athlete is one who has competed at the national and/or international level. For post-collegiate athletes, this may involve having competed at the U S A championships, the I A A F. World Track and Field Championships, or the Olympic Games. For collegiate athletes, an elite competitor is an individual who has attained All-American status in his or her event by virtue of a top eight finish at the NCAA Championship meet

Performance Ethos The notion that the underlying values of elite sport place an emphasis on performance, which in turn drives athletes to adopt a “win at all costs” attitude towards competition (Segrave, 1993)

Device Paradigm Borgmann’s (1984) notion that many people seek out the most technological means available for any given task, even though less technological means may be better suited to that task

Technocratic Imperative A term, related to the device paradigm, that refers to the idea that once a given technology exists it must be used. There is, therefore, a sense of determinism associated with the technocratic imperative

International Amateur Athletic Federation Also known as the I A A F, this organization regulates the sport of world-class track and field, and enforces bans on athletes convicted of any rules transgression.

United States Track and Field Also known as USTAF, this is the governing body of elite track and field in the United States. While subject to the rules of the I A A F. and the IOC, USTAF has autonomy over the sport within the U S, and maintains its own testing procedures for the use of performance-enhancing substances above and beyond those of the other two organizations

Cyborgification A term referring to the process by which one becomes increasingly tied to and altered by technology. I use this term interchangeably with “self-technologization” throughout this study

EPO EPO is short for erythropoietin, a synthetic chemical that increases the production of red blood cells, which enhances the body's oxygen-carrying capacity (Kammerer, 2000)

Creatine Creatine is a chemical compound that is found in most meat, and occurs naturally in the body. It appears to aid in the supply of energy during prolonged exercise and help muscle recovery. The use of creatine supplements is widespread, and currently not banned in any sport.

Assumptions of the Study

The following assumptions were made in reference to this study on the technological life history narratives of elite track and field athletes:

1. The life history interview is an effective method of attaining an account of one's life.
2. The athletes in this study were able and willing to articulate their life histories and engagements with technology.
3. Participants in this study told their stories as accurately and completely as they could.
4. The narrative analysis process is an effective means of configuring participants' life stories into a coherent narrative with a recognizable plot.

Limitations of the Study

The present study of elite track and field athletes' technological narratives faced several potential limitations. First, as with all interview research, participants' testimony was subject to selective recall, and filtered through their personal memories of events that

may have occurred many years ago. Second, although efforts were made to triangulate participants' stories with their coaches and photographs, it is possible that participants may have, at times, chosen to represent their experiences inaccurately for any number of reasons. For example, participants may have felt uncomfortable voicing their honest opinions of highly controversial topics like the use of banned substances or the latest plans to randomly test Olympic athletes. Third, while the methodology of narrative analysis provides general guidelines, there is no precise "road map" for the process of narrative configuration. Therefore, even though numerous actions were taken to ensure the complete integrity and rigor of the final narrative texts, the inherently subjective nature of narrative research makes it impossible to establish the validity of these texts. This said, all of these aforementioned potential limitations are only limitations in the sense that they may impede the process of narrative configuration, and in no way should they be viewed as threats to the creation of "true" texts. Such a position, I maintain, operates under the positivistic assumption that participants' lives have a singular reality that this study seeks to uncover.

Significance of the Study

While the debates over the influx of various technologies into the culture of elite track and field become more feverish with the introduction of each new innovation and positive doping test, researchers in sport studies have not adequately examined the intersection between sport, technology, and culture. Track and field athletes are driven to perform, both by themselves and by external forces such as their sponsors, and yet they must simultaneously work to maintain the perception of the sport as a "natural" domain.

only occasionally and minimally tainted by space-age implements, equipment, and facilities, or contaminated by the use of performance-enhancing procedures and substances

The significance of the present study is based on the notion that the athletes themselves are in a uniquely qualified position to tell their stories of lifelong engagement with technology, and that by doing so sport scholars and the athletes will gain a greater understanding of how being raised in the landscape of American technoculture relates to elite track and field athletes' interfaces with and perceptions of the various technologies at their disposal. Through interviewing a select group of Olympic-caliber track and field athletes and subsequently working with them to co-construct their technological life history narratives, both the participants and myself gained a greater understanding of how they viewed themselves and their identities in terms of technology.

The seven narratives presented in this study also contribute to the growing interdisciplinary and transdisciplinary work in cyborg studies. In particular, this study offers a means of empirically investigating the highly theoretical, often abstract, work being done in the growing area of cyborgology. It is one thing to declare, as Haraway (1991) does, that the global web of science and technology has made cyborgs of us all, but it is something else to allow individuals an opportunity to recount their own ways and degrees of being technologized. Finally, while not the primary aim of this study, telling their stories may help the participants in this study better situate themselves in the current debates over technology in track and field, and this, I maintain, is the first step towards the democratization of sport technologies.

Before concluding this initial introductory section, I want to lay out the order and content of the remaining parts of the dissertation so that the reader has a sense of what will follow. This dissertation consists of five main parts, the first of which is, as I have said, an introduction that provides a synopsis of the topic of the dissertation and my main research objectives. In Part Two, I provide a detailed review and analysis of the literature on the philosophical and cultural studies discourse on technology. I then introduce and detail the work being done in cyborg theory, and how it applies to sport. Also, I provide an in-depth socio-historical analysis of sport technologies and outline a tentative typology that hopefully encompasses the myriad of technologies available to contemporary athletes. Finally, I briefly discuss the power of narrative work and its application to sport research.

Part Three covers the methodology of the present study. I discuss in detail the process of narrative analysis I employed in creating the technological life history narratives of the seven participants in this study, and provide a rationale for their inclusion in the study. I also address the issues of “voice” in qualitative research, and discuss the means by which I sought to establish academic rigor throughout the research process.

In Part Four, I present the technological life history narratives of the seven track and field athletes who served as participants in this study. In essence, then, Part 4 represents the primary results of this qualitative investigation.

Finally, in Part Five I discuss how the seven narratives presented in Part 4 relate to my primary research objectives, as well as to various issues raised in the first three sections.

of the dissertation I also discuss the implications of the narratives for several areas of study, and suggest numerous possibilities for future research

Part II: REVIEW AND ANALYSIS OF THE LITERATURE

Introduction

As I have suggested, the growing academic and popular discourse on technology has been hampered by an uncertainty over what precisely is meant by “technology.” For this reason, the initial section of this review examines the literature on the philosophy and cultural studies of technology. A thorough analysis of the numerous framings of technology will also provide a background against which to negotiate the complex, often contradictory, academic discourse on technology and society. I focus on the ways that technology has been defined and conceptualized in the latter half of the 20th century, paying specific attention to how theorists have described the relationship between humans, technology, culture, and socio-political organization. By sorting through this myriad of representations of technology, I hope to demonstrate the necessity of viewing technology as a non-neutral, highly politicized phenomenon with the capability of supporting new forms of human agency, and to highlight the notion that, in the first years of the 21st century, our lives may best be understood as “plugged-in” members of particular technocultures. Further, an overview of conceptualizations of technology will provide a useful backdrop against which to talk more specifically about sport technologies, and the technological life stories of elite track and field athletes. The first section of the literature review concludes with an overview of cyborg theory, and Donna Haraway’s (1985, 1997) idea that modern technocultures are inhabited not by “natural” human beings, but hybrid human-animal-machine cyborgs who are characterized by multiple and fractured identities. I include this discussion of cyborgology as a way of introducing the possibility that the narratives of contemporary elite track and field

athletes must be viewed in light of the highly technologized nature of modern Olympic sport. To further situate participants' technological narratives within the larger technologized atmosphere of American culture and international track and field, I also include examples of how technology, in general, and specifically cyborgs have been represented in popular culture.

The second section of the literature review examines technology within the context of elite sport, with a particular emphasis on the technologies present in Olympic track and field. Following an introductory overview of the history of technological developments in elite sport, I discuss the current debates over the increasingly technologized state of elite sport. On one hand, some researchers consider the influx of various sport technologies a threat to the integrity of competitions, and worry that the increasing technologization of sports like track and field will ultimately lead to the dehumanization of athletes. In contrast, a growing number of sport studies scholars view "technosport" simply as an extension of the larger American and global technocultures, and argue that elite athletes are perhaps the best examples of cyborgs. Next, I present a tentative typology of sport technologies which will be useful in discussing the various technologies that the participants in the present study engage with on a regular basis.

In the final section of the literature review, I discuss the importance of telling stories, and describe how the qualitative methodology of narrative analysis may be used to illuminate the technological life histories of elite track and field athletes. I also outline several uses of narratives proposed by researchers from several fields, including sport

studies and bioethics, and highlight several methodological issues related to narrative work

Defining Technology

Before I examine the various theories of technology, I will first attempt to generate a working definition of technology, a difficult undertaking considering the ambiguity of the term itself. Indeed, perhaps the main problem in arriving at a user-friendly definition of technology is one of scope. Specifically, technology must not be defined so narrowly that it includes only things like advanced machinery or devices, because this precludes the notion that numerous socio-cultural and political forces shape what constitutes technology in any particular context (Ihde, 1993, Sharpe, Harper, & Brown, 1998). As well, such a definition does not address the idea that technology often manifests itself not in physical objects, but in various forms of knowledge and systems of organization as well (Foucault, 1979, Shogan, 1999). It is equally important to resist an inflated definition of technology that equates it with procedural or instrumental rationality, a system of means-end efficiency, for such a broad and abstract usage of the term proves of little practical use (Ihde, 1993, Sharpe, Harper, & Brown, 1998). Webster's (1997), for example, has defined technology in this manner: "The system by which a society provides its members with those things needed or desired" (p. 1374). Efforts to incorporate aspects of both narrow and broad definitions of technology have not yielded much success either. One noteworthy example is Zeigler's (1997) citation, taken from the 1997 Random House Dictionary of the English Language, of what he calls a "precise" (p. 340) definition of technology: "The branch of knowledge that deals with the creation

and use of technical means and their interrelation with life, society, and the environment, drawing upon such subjects as industrial arts, engineering, applied science, and pure science ”

Ihde (1993) fares much better in his effort to define technology by focusing on its characteristics, and argues that for something to be considered a technology it must: 1) have some concrete, material element, 2) enter into contexts in which it may be employed by humans, and 3) be considered as “partners” in a relationship with humans who create or use it. There are obvious limitations to Ihde’s definition as well, however, the most telling of which involves his assertion that technologies are characterized by a concrete, physical state of being. While this makes intuitive sense, it unfortunately precludes the possibility that things such as sport psychological interventions might, in fact, function as technologies in cases where athletes use mental training to alter or eliminate negative thoughts (Butryn, 1999a). Hoberman (1992) has even labeled sport psychology the “ultimate” sport technology. Further, while Ihde (1993) does account for the experiential aspect of human-technology relations, his insistence on labeling technology as a tangible object limits any discussion of how elite sport and American society, in general, may be considered as technological entities in themselves.

Because even the best attempts to define technology always seem to fall short, Mitcham (1994) concedes that the inherent tensions between narrower and broader definitions and usages of the term “technology” cannot be completely reconciled, only “accommodated” (p. 151). While one option popular in academic circles has been to simply operationalize the term, thereby reducing its range of application (e.g. “For this

study, technology will be defined as ”), Mitcham (1994) suggests that adopting a more flexible and inclusive usage of “technology” allows for the gradual formulation of appropriate distinctions among different conceptualizations of technology as deeper levels of analysis and shifting contexts dictate Technology defined as such is not an equivocal term that loses its ability to denote anything conclusive, but a term which adapts to fit specific contexts (Mitcham, 1994) This sort of definitional resolution is well suited to the present study, for while I will sketch out a typology of sport technologies later, I must also allow enough conceptual space to discuss technology more broadly as a global phenomenon that has ontological and epistemological elements as well as physical elements In other words, in using the term throughout the course of this study, I must be able to reference particular advancements in running shoe materials, the notion of American culture itself as a technological lifeworld, and the ways in which we view ourselves and our bodies technologically

As this attempt to construct a useable definition of the term “technology” illustrates, the complexity of the phenomenon warrants further exploration, although as Borgmann (1984) admits, “technology is at the intersection of so many currents and disciplines that the literature has become boundless in its extent” (pp 5-6) For this reason, I have made no attempt to present an exhaustive treatment of the research on technology Rather, I give a general overview of several theoretical models proposed by philosophers and cultural studies researchers to further illuminate the intimate relationship between humans, technology, and culture Aside from helping to frame the results of the present study, much of the work I discuss in this section will relate directly to my subsequent

analysis of sport technologies, and ultimately contribute to the process of narrative analysis

Theorizing technology

The growing interest in technology within philosophical circles has generated numerous theories aimed at explaining the role of technology in modern societies. While Borgmann (1984) has argued that theories of technology fall into three main categories, including the substantive, instrumental, and pluralistic positions, Feenberg (1999) offers a more well-defined model that contains four distinct theoretical schools of thought with respect to technology, consisting of the *instrumentalist*, *determinist*, *substantivist*, and *critical* positions. A brief overview of each of these theoretical frameworks will provide a useful entree into my subsequent examination of the literature on sport technologies, and hopefully help frame athletes' technological life histories in theoretical concepts that might be identifiable in their narratives.

Instrumentalism proposes that technologies are value-free or neutral tools that humans employ unidirectionally as a means to an end (Borgmann, 1984, Feenberg, 1999). Feenberg (1999) considers instrumentalism to be a modernist, "common sense" view of technology which links technological progress with societal progress. Following an historical line tracing human-technology interactions back to the stone age, this decidedly anthropological aspect of instrumentalism positions humans as toolmakers and tool users from their origins. In other words, "we" have always used existing devices to procure given ends in the ongoing process of societal evolution. While instrumentalism carries with it the possibility that technology can be used for malevolent purposes (e.g.

the use of fission in bomb making), it has often aligned itself with the Baconian notion that technology should be directed at liberating humanity from the burdens and ills of contemporary life, and hence instrumentalists have often maintained a highly optimistic attitude toward new technological developments

While this form of utopian instrumentalist view of technology as the benevolent catalyst of progress has often been accompanied by a lack of healthy skepticism and criticism regarding the development and use of various technologies, it has been challenged on several grounds. Feenberg (1999), for example, argues that instrumentalism's attempted neutralization of technology in the 19th century removed it from the realm of political debate, and its supposed generic nature facilitated the formation of a story that portrayed technology's advancement as parallel to that of the human species. This sort of universalism (i.e. "we" will be better off with more technology) glosses over issues of access to and control of technologies. Further, Borgmann (1984) argues that the emergence of modern technologies must also be considered in consequentialist terms. That is, many devices are created purposefully to achieve specific ends, and thus any suggestion that technologies simply come into existence and are subsequently used for whatever purposes seem appropriate is highly suspect and ultimately naive. There is no doubt that these weaknesses of the instrumentalist position reveal it to be both naive and potentially dangerous, because viewing technology as merely a value-neutral tool obscures the possibility that technologies are, in fact, ideological themselves (Pippin, 1995). However, I would argue that a less enthusiastic version of instrumentalism's faith in the benevolent and

humanitarian use of technology should be maintained if we are to avoid an equally flawed technophobic position that rules out any sort of fruitful engagements with new innovations.

Theories of technological *determinism* generally share instrumentalism's belief in the neutrality of technology, but question our power to control its development and use (Feenberg, 1999). Theorists who espouse this position argue that technologies have their own logic and drive which operate independent of societal constraints (Feenberg, 1995, 1999), a notion that led Langdon Winner (1986) to coin the term "autonomous technology." According to Winner (1986), technology has become autonomous because modern humans are often incapable of changing the course of technological progress once it is "unleashed," and because even the most inconspicuous technologies have the potential to reshape society itself. Winner illustrates this idea by describing the impact that the introduction of the snowmobile had on Lapp social relations. While the snowmobile allowed caribou herders in northern Scandinavia to move from place to place more quickly, it also led to less consistent interactions between herder and herd which resulted in a decline in caribou numbers. Further, less herders were needed because the herding process was now possible with less manpower. The entire structure of the Lapp culture was thus drastically altered by a single transportation innovation. Two additional points may also be drawn from this example. First, it is evident that Winner's deterministic stance owes a debt to Marx, who recognized how various modes of production affected basic social relations (Feenberg, 1999, Ihde, 1993). Second, although Feenberg (1999) claims that technological determinists view technology as

neutral, Winner's (1986) work clearly illustrates that an autonomous technology is anything but value-free. In fact, Winner (1986) explicitly states that technologies should be viewed as highly politicized, rather than neutral.

In general, determinism is grounded in two related assumptions which Feenberg (1999) calls "unilinear progress" and "determination by the base." Feenberg's (1999) notion of unilateral progress refers to the belief that technological progress follows a single course, moving systematically from lesser to greater levels of complexity. While this idea makes intuitive sense when one examines the historical development of virtually any technology, Feenberg (1999) makes an important point in noting that technological progress is, in fact, often not as ordered and sequential as it might at first appear. Within sport, for example, the Professional Golfers Association (PGA) has taken extraordinary measures to prevent the influx of several new types of club designs on the grounds that they essentially de-skill the performance (Santoli, 1999, Tenner, 1996). Drawing from Marxist thought, determinism also proposes that both individual and social institutions are ultimately forced to adapt to the "will" of the "technological base" (Feenberg, 1995, p. 6). As we will see, this idea ultimately fails because of its narrowly conceived vision of technology as a "decontextualized, self-generating," and universal force that operates outside the realms of politics and culture (Feenberg, 1999, p. 78).

The supposed neutrality of technology espoused by advocates of both instrumentalism and some forms of determinism also contributes to its depoliticization as well, because once technology becomes viewed as a value-free instrument it is more easily removed from the practice of open democratic debate (Feenberg, 1995, Winner, 1986, 1995).

Instead, control over the workings of technology is placed in the hands of bureaucratic elites who employ various technological means to retain this control. The system that supports this depoliticization and de-democratization of technology has been termed a "technocracy," which refers to the "wide-ranging administrative system that is legitimated by reference to scientific expertise rather than tradition, law, or the will of the people" (Feenberg, 1999, p. 4). Once in place, technocracies foster an increased reliance on "expert" knowledge, and thus a form of technological hegemony is established in which the masses are encouraged to enjoy the benefits of a blossoming technoculture and to maintain an unquestioning liberal faith in Bacon's promise of a benevolent, liberating technological society (Feenberg, 1999, Winner, 1995). As Feenberg (1999) notes, the presence of a technological hegemony in America is readily visible when one considers events that seemingly unite Americans under one technologically-tinted banner, but which the public actually have little or no voice in creating. The public perception in the 1960s, for instance, was that it was *not* the technocrats who landed on the moon—it was "us" (Feenberg, 1999). More recently, the Pentagon is in the midst of trying to convince congress and the American people that a neo-Star Wars missile defense system is in the nation's best interest.

Among the most vocal skeptics of the increasing technologization of modern societies have been the technological substantivists. According to those advocating the *substantive* position, society is at the mercy of an autonomous techno-juggernaut that will someday dominate humanity (Borgmann, 1984, Feenberg, 1999). Substantive theories are thus generally wary, and often openly condemnatory, of technology.

Substantivism must therefore also be regarded as an essentialist position, because it precludes any alternative notions of technology other than those that link it to the dehumanization of the modern world. In many ways, then, substantive theories that frame technology strictly in negative terms run directly counter to instrumentalism's faith in technological progress.

Perhaps the most oft cited proponents of the substantivist position are Martin Heidegger (1977) and Jacques Ellul (1977). I discuss the work of Heidegger and Ellul at this juncture not simply because their positions provide valuable insight on the role of technology in our lives, but because it is frequently cited by sport scholars who find the influx of new technologies alarming, and who generally equate a more technologized sport with a less "human" one (Charles, 1998, Hoberman, 1995, Rintala, 1995). Put simply, to understand current debates over sport technologies requires a review of their work.

Heidegger ranks among the most important 20th century thinkers on science and technology. In fact, Ihde (1993) describes Heidegger as a "progenitor of a philosophy which raises Technology to utmost importance in understanding the human world" (p. 41). Borgmann (1987) has also found Heidegger's work crucial enough to publish a hundred-plus page review of Heidegger's technology-related writings in Philosophy Today. As Borgmann himself admits, however, much of Heidegger's work deals peripherally with technology, with only two essays focusing exclusively on the topic. Moreover, even this work is limited somewhat, not because of its content, but rather because of Heidegger's style of writing which has made consistent translation difficult.

(Borgmann, 1987) Nonetheless, if only because his writings have influenced sport scholars' examinations of technology, it will be beneficial to briefly discuss two specific points he makes that pertain specifically to the human-technology relationship

Heidegger (1977) offers his most concentrated analysis of technology in an essay entitled, "The Question Concerning Technology" He argues that humans have yet to fully acknowledge the impact of technology on our lives, and that we remain enslaved by technology as long as we continue to view it as neutral Perceiving technology as a value-free phenomenon, Heidegger states, ultimately blinds us to what he calls the true "essence" of technology Somewhat cryptically, Heidegger argues that "the essence of technology is by no means anything technological," by which he means that technology is not simply the machines and devices that have come to play such a central role in our lives, but rather the way in which technology has enveloped our way of knowing and relating to the world This epistemological shift has resulted in a revealing of the world as "standing reserve," or as a set of resources to be maximized and used for instrumental purposes Moreover, this perspective has a tendency to govern all of our encounters and, in the process, eclipse non-instrumental ways of experiencing the world (Leder, 1988)

Jacques Ellul's (1964) writings echo Heidegger's belief that technology is an all-encompassing force rather than merely a collection of tools and devices (Hoberman, 1995), but his most important contribution has been the notion that technology is intimately tied to an ordering principle that seeks to impose an homogenizing efficiency on all it encounters Further, this drive toward efficiency is so fully autonomous that it is virtually immune to moral debates regarding technological progress Finally, Ellul's

(1964) commentary also includes specific references to sport, and he argues that sport is a total "extension of the technical spirit" (p 384), and that the emphasis on quantification and efficiency which manifests itself in the performance ethos of elite sport precludes non-instrumental (e.g. enjoyment, spiritual growth) sporting practices (Hoberman, 1986)

Despite the force and passion of their arguments, both Heidegger (1977) and Ellul's (1964) writings suffer from the limitations of substantivism, in general. First, there has been an inability to convincingly pinpoint how any sort of technological monstrosity has dominated our lives, or to demonstrate that humans are completely powerless to intercede in technological progress. Related to this point is the tendency of substantive theories to lock humans in a technological "iron cage" from which we must passively observe as technology engulfs the world (Feenberg, 1999, Taylor, 1991). Quite obviously, this view also contributes little to a conceptualization of technology which allows for increased human agency with respect to the influx of various technologies. There is a caveat here, however, because for Heidegger in particular, any pessimism towards technology cannot be separated from the post-WWII context in which many of his works were written. In fact, it is quite understandable how, even today, substantivists can look past the benefits of technology to its role in tragic historical events.

In short, substantivist positions that paint technology as an all-encompassing force that seeks ultimate efficiency cannot adequately describe technology's role in our lives, for they bracket out the social-cultural and historical contexts of technological developments, as well as our agency with respect to technology (Feenberg, 1999, Ihde, 1993). I agree, and hope to demonstrate throughout this study that technology is most often incorporated

into the lifeworld and infused to varying degrees with everyday existence While I would maintain that technology is still ubiquitous, it is by no means the totally independent and menacing force envisioned by Heidegger (1977) and Ellul (1964)

This said, it must still be noted that as technological hierarchies and social institutions jointly structure more of social life, their role in the political process grows as well, and the resultant technocracy adheres to the belief that the “technological imperatives” which guide the technical sphere are also best suited to direct the whole of societal relations (Feenberg, 1999, p 75) In other words, technology should not be viewed as beyond the realm of human agency, but care must still be taken to ensure that the politics of technology remain democratic in nature

Several contemporary philosophers of technology have used Heidegger’s (1954) work as the basis of an attempt to move toward a less pessimistic conception of technology Among the most impressive of such efforts is Albert Borgmann’s (1984) proposal that we have the power to reconfigure our relationship with technology in a way that prevents it from becoming *the* force which drives our lives In Technology and the Character of Contemporary Life, Borgmann (1984) argues, following from Heidegger (1954), that we have come to take up the world in a technological manner, and in doing so we have fallen victim to what he calls the “device paradigm,” or the tendency of modern society to seek technological solutions to problems even though simpler, non-technological means may be better suited to the desired task The device itself essentially serves as its own end, and functions best when the machinery by which it operates is least visible Hence, we realize the promise of technology when the device and the good it provides become

indistinguishable, and we are free to enjoy the end result without having to devote to it any effort or attention. Borgmann uses the thermostat as an example of a device whose end (i.e. warmth or heat) is easily and safely obtainable, ubiquitous (i.e. heat travels to all corners of the house), completely unencumbered by any machinery, and which we therefore often fail to view as technological.

While Borgmann (1984) admits that technological devices have undoubtedly contributed to the betterment of human life, and in many cases have allowed us to be more productive and efficient, he argues that our failure to critically examine the device paradigm has led to a fundamental disengagement from the world. As we have discarded the hearth for the thermostat and allowed technology to assume a centralized position in our daily lives, we have lost the deep connection with the world that is, in Borgmann's view, absolutely vital to our realization of the "good life." While some may argue that devices such as central heating and fast-food restaurants were never meant to provide an opportunity for engagement, Borgmann counters that such devices have generally failed to deliver on the promise of enrichment and liberation, and have, more importantly, threatened to relegate meaningful activities to the role of absurd, nearly obsolete pastimes. While Borgmann sometimes understates the ways that technologies have, in fact, disburdened our lives, issues of unequal access cannot be disregarded. Further, his argument that technologies have the ability to undermine liberating practices and provide merely the *illusion* of free choice is an important point that relates to issues of agency and technology.

In contrast to the immediate availability and convenience of the device, Borgmann (1984) describes what he calls “focal things” In short, a focal thing is an object or action that provides us with a deep, complex web of meanings, and which acts as a point of reference in our lives Our intimate and illuminating encounter, or “manifold engagement”, with the focal thing creates the context through which we experience the world, and against which we label things as more or less meaningful While the device is valued because of its lack of demand on our attention, the focal thing derives much of its value from precisely the type of encumbering, often sentimental, associations absent in the device Thus, in contrast to the thermostat, the heat that the stove provided was only part of its meaning and significance, for it also served as a hearth around which cooking and family events were centered

Borgmann (1984) also suggests that we must not leave our engagement with focal things and activity to a series of individual sporadic decisions, for the forces of instrumental reason and the device paradigm which have shaped the norms of our society make it all too easy to fall back into the convenience of the device in totality Indeed, Borgmann believes that, “It would take superhuman strength to stand up to this order ever and again ” (p 207) Thus, what is needed is a systematic social commitment to an ethos of engagement which Borgmann calls a focal practice Through focal practices, we may better position ourselves to critique the ubiquitous nature of technology which remains obscured within the device paradigm

In addition, Borgmann (1984) argues that focal practices are not merely heartfelt leftovers of earlier cultures, nor are they defiant towards or dismissive of technology

Rather, he envisions the focal practice as attaining its most supreme luster through an “intelligent acceptance” of technology (p 247) Furthermore, he suggests that the original Baconian promise of technology which centered around liberation and human enrichment may be restored through a return of focal practices to the core of our daily lives For example, the presence of wilderness in a largely technologized world makes its status as a focal concern all the more empowering and enjoyable and, after hiking through the rain, we may gain a healthier perspective and appreciation of the availability of warmth derived from the thermostat Borgmann’s hope is that our relationship with technology will be reformed through an awareness of the role of the device in our lives and an increased engagement in focal practices which sacrifices efficiency for a more thoughtful, dialogically rich engagement Music is not just experienced via compact discs, but through the actual playing of instruments and attendance at live performances Applied to sports, runners should refrain from training solely on rubberized tracks and obsessing over fractions of seconds during interval workouts, and take an increased pleasure in untimed trail runs in the company of others

While Ihde (1993) defends Borgmann’s preference for focal things that seem to always characterize an idyllic, rustic Montana lifestyle by noting that this romantic notion of the good life is “widely and deeply shared by many North Americans” (p 108), Leder (1988) argues that Borgmann’s refusal to acknowledge the possibility that direct engagements with technology are fully capable of providing a rich experiential connection is evidence of a “heideggerian nostalgia” (p 28) Indeed, while Borgmann refers to the playing of the violin as a focal practice which gathers the “melodious powers

of the world” (p. 5), Leder contends that the record producer might very well find his or her focal practice centered around a computerized mixing board. Indeed, the rising popularity of internet communities and techno-raves seems to contradict Ihde’s claim, for technologically-centered practices do seem to serve as focal practices for many Americans. Therefore, I would argue that Borgmann’s philosophy of technology, while an improvement on more rigid substantive theories, ultimately fails because of its inability to reconcile our membership in an expansive technoculture with the simplicity of country living. In short, Borgmann’s fetish for the “natural” seems to preclude the possibility that increasingly common interfaces between humans and technology could yield different, yet equally satisfying, forms of engagement.

Critical theories of technology reassert human agency with respect to technology while rejecting the instrumentalist view that technology is value-free or neutral. Much like substantive theories, then, critical theories of technology accept the notion that technologies are value-laden, and further argue that technology may be the most powerful carrier of political ideology in contemporary post-industrial societies (Feenberg, 1995, Pippin, 1995). Winner (1986) also points out that technological innovations often facilitate the creation of power structures favoring those who control them. For example, he notes that when engineers were contracted to design the bridges along the New Jersey turnpike, local government officials dictated that the bridges be constructed too low for buses to pass through, thus restricting access to the suburbs for poor, inner-city residents.

Where critical theories of technology diverge from substantivism is in their emphasis on the establishment of alternative means-end technological relationships that are within

the domain of human control (Feenberg, 1999) Critical theorists also reject essentialism and believe in the social contingency, and thus the reconstructability, of technologies to play more democratic roles in different societies The democratization of technology requires that the technological hegemony in place within many western societies, and that fosters a reliance on “experts,” be acknowledged and contested through increased open debates, as well as counterhegemonic practices that challenge the intended use of various technologies (Feenberg, 1999, Ihde, 1993, Winner, 1995)

The denial of technological determinism opens up the possibility that technologies do not necessarily signify (mean) and function as their creators originally intended, as the underground “hacker culture” has demonstrated (Menser & Aronowitz, 1996) This must, of course, not be confused with the naive notion that these counterhegemonic techno-spaces are limitless or easily accessible While elite athletes may choose to cyborgify themselves in creative ways having little to do with performance improvement, the fact that access to many of these technologies seems hopelessly out of reach to lower socioeconomic groups cannot be ignored

Feenberg’s (1999) typology of theories of technology provides a useful way of negotiating the work of philosophers and social theorists of technology However, it does not directly address the intersection between technology and culture Further, although critical theories do account for the role that social institutions play in technological societies, they still do not provide a sufficient link between culturally-specific values, beliefs, and practices and technology, nor do they address how people perceive and experience their lives as members of technologized lifeworlds That said, Feenberg

(1999) does devote a brief section of his work to cultural studies and technology, but given the nature of this study, a more in-depth analysis will be beneficial. For these reasons, I next discuss the contributions made by scholars working on technological issues from a cultural studies perspective.

Conceiving a “technoculture”: The meeting of cultural studies and technology

As I have argued, while philosophical conceptualizations of technology provide useful ways to examine this complex phenomenon, they are not particularly well-suited for the present study, because aside from Ihde’s (1983, 1993) work they fail to clearly establish the connection between science, technology and culture. Cultural studies scholars are currently developing an intellectual space within which feminist and other branches of cultural studies may engage with the growing interest in the study of science, technology, and culture (Balsamo, 1998). Even prior to Haraway’s (1985) introduction of cyborg theory, issues related to science, technology, and culture were the topic of a number of papers by scholars from across disciplines, although most made explicit their ties with the Frankfurt School’s critical theory and previous work by Marcuse and Habermas (Balsamo, 1998). Nonetheless, it was Haraway’s (1985) seminal work on socialist-feminism and cyborgs that eventually spawned several anthologies which have contributed to an expanding critical discourse on the cultural implications of scientific and technological innovations (Menser & Aronowitz, 1996; Balsamo, 1998). Among the most noteworthy of these texts, all of which extend Haraway’s original work in different (sometimes conflicting) directions, are Technoscience and Cyberculture (Aronowitz,

Martinsons, & Menser (Eds), 1991), The Cyborg Handbook (Gray (Ed), 1995), and Cyborgs and Citadels (Downey & Dumit, 1997).

The anti-disciplinary and post-disciplinary character of cultural studies is necessary to account for the “multiple lines of constitution” of technocultures, because examinations of even the most common devices must incorporate a range of issues, including privacy rights, embodiment, identity, politics, and numerous other aspects of cultural citizenship (Menser & Aronowitz, 1996, p 21) In fact, to even imagine embarking on this study of the technological narratives of elite track and field athletes within the confines of traditional disciplinary boundaries would be virtually impossible because of the complex sociological, psychological, historical, and political intersections of sport, culture, and technology

A cultural studies approach to technology is also useful because of the grounded, “organic” nature of cultural studies work Ideally, cultural studies is far from a detached academic project Rather, it emphasizes the notion of “praxis,” which means that practice is informed by theory, and theory by practice. Thus, since technological relations in society must be changed through participatory means, from below rather than above, cultural studies seems particularly appropriate for any analysis of athletes and technology As Feenberg (1999) suggests, the influence of scholars like Raymond Williams and the work of the Birmingham Center for Contemporary Cultural Studies, in particular their reworking of the Gramscian notion of hegemony, provided a necessary alternative to the iron cage views of determinism and substantivism

A brief note is first necessary on science, technology, and culture, and how these concepts have been defined within cultural studies research. On one level, these three terms are used to connote different but interrelated concepts. For instance, one might argue that *scientific* communities operating in post-industrialized *cultures* employ various *technologies* to achieve a given end. However, one could also argue that each term is “permeated and penetrated by the other two” (Menser & Aronowitz, 1996, p. 10) to such an extent that attempts to distinguish among them yields an artificial separation which renders all three ontologically impotent. For this reason, several scholars have suggested that while science, technology, and culture may still be used separately, it may also be beneficial to speak of contemporary societies as collections of *technocultures*. I agree with this assessment, and to make the connection to sport, add that while there is a clear relationship between the sport sciences and technological innovations, sport itself exists within the larger American technoculture. Further, elite athletes are simultaneously members of sporting communities and other technological communities (e.g. internet groups) as well.

What does it mean to say that Americans live in a technoculture? As Menser & Aronowitz (1996) point out, “American culture is technoculture” (p. 10), and everyone from truckers to cyberpunks to athletes employ technologies in such an intimate fashion that their cultural (and sub-cultural) activities are inseparable from these technologies. Viewing our lifeworlds as technocultures also prompts us to reconceptualize the boundaries between humans and technology because at different levels technology is within us, at our fingertips, and far out of reach. We live within it, and it “lives” within

us, and at different times we appear to be appendages of one another-I move with the aid of an artificial limb and the factory assembly line moves with a system of blue-collar prosthetics. The technocultural flows are rarely unidirectional and there is never any true separation of means and ends as instrumentalists and determinists would argue.

Of course, no technoculture is completely coherent, and similar technologies often come to represent very different cultural values. Menser & Aronowitz (1996) illustrate this point by comparing the cultural signification of two brands of motorcycle. The Harley Davidson motorcycle is generally considered to be emblematic of "American" technoculture, and it has traditionally been associated with the "open road" ethos of films like Easy Rider. In contrast, the Kawasaki Ninja, often viewed with hostility by ardent nationalists in the biking community, nonetheless represents the equally "American" ideal of flashy aesthetics and raw speed. I will argue later that debates over the allowance or restriction of various sport technologies are closely tied to the competing values of the larger American technoculture and the ethos of elite athletics.

Menser & Aronowitz (1996) also claim that the Ninja motorcycle illustrates the pragmatics of technology because its main purpose is to *do* (i.e. travel faster, more smoothly), while the Harley-Davidson exemplifies phenomenological issues by virtue of its rider's sense of feeling on display. Their central point, that technocultures use technologies for pragmatic as well as presentational reasons related to experience, is an important one, and I will discuss this notion as it relates to sport technologies later. However, I would also propose that there is still a phenomenological element in even the most instrumental use of technologies. While the Ninja rider's experience may not be

one of the “spectacle,” the feeling of traveling incredible speeds and its impact on the mind and body should not be discounted

Finally, the motorcycle example also illustrates the difficulty in establishing any distinct cultural ownership of technologies (i.e. the Ninja is Japanese, yet American as well), and for this reason it must be understood that while we can speak of an “American technoculture,” it cannot be fully described in terms of any geographical boundaries (Menser & Aronowitz, 1996). This point is readily apparent if we extend the discussion of technology past mechanical objects to include things like the internet, a milieu which defies simple notions of geographically-centered technocultures

While both determinists and substantivists who espouse the notion of autonomous technologies would claim that various innovations autonomously shape the social landscape of cultures in which they emerge or are introduced into, cultural studies scholars have generally sided with critical theorists’ notion that the omnipresence of technology does not carry with it any kind of deterministic quality (Menser & Aronowitz, 1996). A cultural studies of technology thus positions itself to critique all forms of technological determinism while still recognizing the forces that generally frame our relations with it as such (Menser & Aronowitz, 1996). Technology “permeates” local and global cultures in complicated, multi-directional ways, and is better explained by a theory of “complexity.” According to Menser and Aronowitz (1996), this means that we must “recognize the multiplicities inherent in these now indeterminate objects and ‘fuzzy’ events” (p. 9), a process that forces a deeper, more idiosyncratic analysis aimed at

examining the relationship between *this* technology in *this* culture at *this* particular moment in history

Technology is not only socio-culturally and historically contingent, however. The use and meaning of a given technology is also intimately tied to the individual or group that engages with it. This idea has been explored by cultural studies work in the area of audiencing and encoding/decoding (Hall, 1993). Silverstone and his colleagues (1992, 1996), for example, challenged the taken-for-granted definitions of various "household" technologies and demonstrated how instruments such as televisions and microwaves are interpreted and resignified to match the user's own cultural practices and values. Ihde (1993) also acknowledges the act of denying "user intent" (p. 116), and the possibility that people may employ various devices in ways never conceived of by scientists or inventors, and which might even undermine their original purpose. This notion links critical theory's emphasis on individual agency with respect to technology with the cultural studies notion of "signification," where meaning is mediated by how technologies are "read." Technology does not have a single meaning, but many meanings depending on the context in which it is introduced and who is engaging with it. This last point is very relevant to this study on elite athletes and technology, because framing technologies only in terms of their potential contribution to performance precludes any creative, non-instrumental use of sport technologies, as well as user practices that challenge oppressive power relations tied with many modern technologies.

From Humans to Hybrids: The Dawning of the Cyborg Era

Cybernetic organisms Academic discourse and the web of technological engagement

The term “cyborg,” a nickname of sorts for “cybernetic organism,” was coined in 1960 by NASA scientists Manfred E. Clines and Nathan S. Kline to describe the creation of an enhanced being capable of surviving in extra-terrestrial environments. Far from the dramatic techno-colossuses of more recent cyborg visions like the Terminator, however, the first true cyborg was a simple, white lab rat with a pump implanted into its body to release chemicals aimed at regulating physiological functions. This unsightly creature with a plastic and metal apparatus plugged-in via its tail nonetheless “belongs in Man’s family album” (Haraway, 1995, xv), because it marked a clear end to the notion that animals, including humans, and machines would forever inhabit separate physical worlds.

Within the academy, many consider the birth of cyborg studies, or cyborgology, to be Haraway’s (1985) seminal essay “Manifesto for Cyborgs: Science, Technology, and Socialist-Feminism in the 1980s,” a piece which began a discourse on cybernetic organisms that traveled across multiple disciplines. In fact, cyborg researchers now populate diverse areas, including art, English, cultural studies, biology, medical studies, NASA scientists, and more recently sport studies.

Haraway (1991) conceives of cyborgs as both physical creatures of social reality, hybrid beings with their own unique subjectivities, and creatures of world-altering fiction and liberating imagination. In other words, cyborgs are both the subject of a highly theoretical academic discourse on technology and the malleable products of an increasingly global technoculture (Haraway, 1985, Hayles, 1999). Haraway (1991) also

argues that by the late twentieth century, we were all subject to a blurring of the boundaries between our individual socio-political lives and the possibilities of contemporary science fiction. As she states, "The cyborg is our ontology, it gives us our politics. The cyborg is a condensed image of both imagination and material reality, the two joined centers structuring any possibility of historical transformation" (p. 150). Haraway's (1991) cyborg is thus a highly politicized project initiated when these boundary projects are playfully transgressed, and the often oppressive borders of modernity polluted. These boundary crossings, Haraway (1991) suggests, reveal previously hidden forms of domination and help people reclaim responsibility for the ways in which their identities are constructed and reconstructed. For example, Haraway's (1991) story of cybernetic hybridity characterizes "nature" as a trickster or wily coyote, and places women and machines in an alliance whereby representations which portray women as passive and technology as male are challenged (Grant, 1999).

Along with the "border wars" between social and fictitious realities, Haraway (1991) points to other boundaries of modernity which cyborgs render hopelessly porous. Among these dualities, particularly within western societies, are those between culture/nature, male/female, civilized/primitive, truth/illusion, and God/man (p. 177). More relevant to the present study of athletes and technology, though, is Haraway's focus on the "leaky" (p. 152) distinctions between humans, animals, and machines.

Regarding the *human-animal* boundary, Haraway (1991) argues that biological and evolutionary theories over the last two hundred years have demonstrated that the lines between human and non-human life are more a matter of relative connections than a zero-

sum affair. She also cites some threads of feminist thought which have proposed intimate relationships between humans and other living creatures, including the notion of the earth-as-organism, or Gaia (e.g. Merchant, 1980). Perhaps the most controversial of such transgressions, however, involve transplant operations where humans are fitted with baboon or pig hearts in a curious collision of high-tech medicine and animal rights activism. While an in-depth discussion of such transgressions is beyond the scope of this paper, it is evident from such examples that cyborgs present many challenging moral and ethical dilemmas.

The lines between *humans and machines* are also eroded by cyborgs, and the increasing complexity and capacity of machines over the last half of the twentieth century have clouded the distinctions between natural and artificial, mind and body, self and other, and other concepts used to distinguish humans from automatons (Haraway, 1991). Again, Haraway argues that while efforts to technologize oneself do not, in themselves, disintegrate the lines between humans and machines, the cyborgification process helps restore agency by placing responsibility over the reconstruction of boundaries back in the control of the individual. I will apply this idea to sport later, and argue that openly cyborgified athletes situate themselves in a better position to see the ways in which such boundaries control and direct their lives than do athletes who deny their ties with technology. To summarize, the cyborg for Haraway (1991) is a project of boundary transgressions, the accommodation of seemingly disparate identities, and an exploration of the realm of possibilities one might explore as part of a larger political project.

Another important aspect of Haraway's (1991) cyborg involves an emphasis on ending the quest for a singular, unified self. As she states, "The cyborg is resolutely committed to partiality, irony, intimacy, and perversity. It is oppositional, utopian, and completely without innocence" (p. 151). In short, to be a cyborg is to relish shifting subject positions and fractured identities within the socio-cultural and technological web. Haraway also suggests that cyborgs are not sentient "black boxes" that defy external explanation, but situated knowledges which are intimately connected to issues of embodiment. As Gray, Mentor, and Figueroa-Sarriera (1995) state, this implies that cyborgs are not barren with respect to identity and corporeality, but rich, complex, and fluid. Further, while infinite vectors of transformation exist in a cyborg society, their particular subjectivities remain tied to issues of social difference, including our subject positions as raced, classed, gendered, and sexually-oriented individuals. The cyborgification process does not replace these aspects of the socio-political self, but extends them in novel directions while blurring the distinctions among the various categorical labels (Gray, Mentor, & Figueroa-Sarriera, 1995).

While considering one's level of technologization as another kind of social difference is interesting, I am not yet sure how it would work in practice, for it seems possible that the act of cyborgification could also lead not to any sort of liberating transgression, but to the strengthening of many of the boundaries it seeks to dismantle, including those related to race and gender. Mentor (1998) echoes my concerns here, and notes that the fascination of hybrid existences via the engineering of human physiology has some rather dark roots in 20th century racist ideology and the like. In fact, Haraway's entire notion of

transgressing boundaries as a means of empowerment is one that must be examined empirically at some point to determine the experience and effectiveness of engaging in such a project. Further, Haraway sometimes seems to gloss over the fact that one's ability to take control over the ways in which one is technologized is most certainly contingent on class, and the ability to engage with the same technologies as other members of society.

Cyborgs must also be understood in terms of degrees of engagement with technology, and thus even those who might be labeled "low-budget" cyborgs still live in a "cyborg society" characterized by a full range of organic-machine relations (Gray, et al, 1995, p 3). This range encompasses such diverse interfaces as pilot-guided missile systems and grandmothers with pacemakers, and in many ways cyborg society represents an entirely different worldview, a postmodern response to those seeking a return to a planetary modernism, a pristine earth with natural people who use but never commune with technology. As Gray and Mentor (1995) suggest, even the postmodern nation-state qualifies as a cyborg, with its mix of "humans, eco-systems, machines, and various complex softwares (from laws to the codes that control the nuclear weapons) in one vast cybernetic organism, linked itself in many ways to the rest of the politics and other forms of life of the Earth" (p. 454). As this quote illustrates, cyborgs are far from a silicon-valley phenomenon, or even a global event. They may, in fact, constitute the world itself.

Within the context of sport, Bale (1997) has also suggested that sporting environments are becoming more explicitly technologized, and that the athletes who compete in these arenas are, in one sense, extensions of the techno-landscape. I agree with Bale's (1997)

assessment, and add that cyborgified athletes are not independent of their surroundings, but part of a larger overlapping system, plugged-into and hence reliant on existing technological webs to survive and prosper. There would be no cyborg Olympians, for instance, without the global communications grid that transmits images of competitions worldwide, or without the sport scientists who support their nation's athletes with high-tech training and rehabilitative facilities, restorative substances (e.g. Gatorade, cortisone), and in the future, genetic enhancements (Zorpette, 1999).

A growing area in cyborgology is the critical discourse on "gendered" cyborgs, which deals primarily with the intersections and tensions between feminism, class, and technology. Since most of the history of technology has been conducted by and focused on men, numerous scholars have argued that it is necessary to investigate the ways in which reproductive technologies, for instance, serve to liberate or oppress women in certain contexts. The notion of gaining agency and equality through technologization is perhaps best represented by Haraway's (1985) quote, "I would rather be a cyborg than a goddess" (p. 108).

Finally, while the relationships between class and gender and technology have received much attention by cultural studies theorists, how race and ethnicity fit into the cyborgian equation is not as clear. Aside from scattered essays (e.g. Eglash, 1995), there is little in the way of a substantial discourse on this front. There are, of course, numerous examples of technologies that have been read differently by the dominant culture (i.e. whites in America) and other groups. The use of turntables by early DJs and the accompanying practice of "scratching" stands out as a case where the traditional use

of a given technology was retooled in the process of creating an entirely new form of musical and cultural expression. There was also the short-lived television show, *Mantis*, that featured a black crime-fighting scientist equipped with a suit with various sorts of technological gadgets and powers. Such examples warrant further study by those in cyborg studies. Finally, there are political implications for the blurring of boundaries here as well, and while it is not possible to do so here, it will be necessary to investigate the possibilities and problems associated with forms of cyborgification that diminish the importance of or engagement in meaningful cultural practices.

A more recent offshoot of cyborg theory that has particular relevance to the present study of technology and elite track and field athletes is "cyborg anthropology." As an academic project, cyborg anthropology combines the cultural anthropology of science and technology with feminist studies of science, technology, and medicine. Cyborg anthropology extends Haraway's (1985) original work by examining ethnographically the boundaries between humans and machines and the ways that we construct and resist these boundaries (Downey, Dumit, & Williams, 1995). To the extent that cyborg anthropologists critically examine how technology is an inherently politicized cultural activity, their project is also associated with the larger transdisciplinary work in cultural studies (Downey, Dumit, & Williams, 1995).

The social cyborg: *Alive in the matrix*

In their living and breathing manifestations outside of academia (although the academic/literary distinction is another which becomes problematic in a cyborg world), cyborgs involve very tangible elements as well. As Haraway (1995) notes, cyborgs have

some techno-additive which makes them “trans” or “post” to something that was once, in the safe haven of modernity, viewed as natural (p xv) Put simply, they are the products of “the melding of the organic and the mechanic, or the engineering of a union between separate organic systems” (Gray, Mentor, & Figueroa-Sarriera, 1995) Further, the cyborg cannot be captured in any single vision, nor is there any consensus on what precisely constitutes this hybrid being, for as Gray, et al. (1995) suggest, “It’s not just Robocop, it is our grandmother with a pacemaker” (p 2) While the exact makeup of cyborgs is often left intentionally fuzzy, it is safe to say that the American society which cyborgs inhabit is one in which intimate organic-machine interfaces exist on virtually all levels (Gray, et al , 1995)

Gray, Mentor, and Figueroa-Sarriera (1995) distinguish between four overlapping types of cyborg technologies restorative, normalizing, reconfiguring, and enhancing Cyborg technologies are labeled *restorative* when they help restore lost abilities through chemical, surgical, or prosthetic interventions In sport, this might involve knee replacement surgery or, for women athletes, hormone replacement therapy Cyborg technologies can also be *normalizing* in cases where they restore a person to his or her prior condition, particularly with respect to appearance Artificial mechanical hands, for instance, may not have full functionality, but they do allow recipients to appear as if they have not lost their hand I would add here, however, that even the use of the term “normal” is somewhat problematic *Reconfiguring* cyborg technologies are those which aid in the creation of infinite numbers of post-human variants, from virtual reality interfaces to “proto-humans” capable of inhabiting inhospitable environments (Gray, et

al , 1995, p 3) Finally, cyborg technologies can be *enhancing* if they are aimed primarily at creating more efficient creatures for whatever task is needed This type of cyborg seems to describe the wildest dreams and the most horrific nightmares of many sport scholars, for while some view the fantastic possibilities of hybrid sport experiences and performances, others envision the emergence of sportive Frankensteins (Hoberman, 1992)

As Gray, Mentor, and Figueroa-Sarriera (1995) note, “the range of human-machine couplings almost defies definition even existing human cyborgs range from the quadriplegic patient totally dependent on a vast array of high-tech equipment to a small child with one immunization” (p 4) To a large extent, the inter- and trans-disciplinary researchers adding to the now healthy discourse on cyborgs have unintentionally contributed to this hopeless confusion over the naming of different ways of cyborg being. In The Cyborg Handbook (Gray, 1995) for example, there are numerous distinctions made between different types of cyborgs, depending on the disciplinary backgrounds of the author and the cultural context in which the cyborg is discussed For this reason, I suggest that such distinctions will be necessary for sport, as the genetically altered athlete must somehow be distinguishable from the high jumper who uses computer analyses to assess his or her form It is also important to view the cyborgification process as an ongoing and bi-directional phenomenon, for not only do humans become more machine-like, but machines now possess increasingly human characteristics (e g vehicles that “remember” seat positions, etc) In fact, researchers are currently in the process of trying to combine human genetic material with computer circuitry, and it appears likely that

elite sport will have to someday accommodate not only athletes using steroids or athletes with prostheses, but “thinking” sportive androids as well

Cyborgs need not alter themselves irreversibly, of course, and many cyborgs have employed temporary, removable means of self-technologization. Professor Steve Mann of the University of Toronto teaches what is believed to be the first college class on cyborgs, and spends most of his daily existence interfaced with technology (Mann, 1999). A graduate of MIT, Mann employs a wearable computing system (WearComp), complete with several Internet-connected computers sewn into his clothing, biosensors which provide physiological feedback, and wraparound sunglasses which serve as his window to a “videographic” world (p. 36). While the equipment required to maintain this perpetual cyborg state is still rather cumbersome, it is wireless, and thus Mann is able to move unhindered through his surroundings. In fact, Mann claims that his cyborgified visual augmentations allow him to process the external environment in far greater detail than others can, even though he does not actually “see” the world around him. As he states, “I see the world as images imprinted onto my retina by rays of light controlled by several computers, which in turn are controlled by cameras concealed inside my glasses” (p. 36). While this kind of advanced technology has yet to enter into the sporting arena, or the rest of society for that matter, one can certainly envision athletes in shooting sports, for instance, employing similar technologies in their efforts to enhance their aiming capabilities.

One might be tempted to ask, given the wide scope of definitions of cyborgs, whether or not humans have *always* been cyborgs. For example, couldn’t one argue that for pre-

human populations things like tree branches were, in effect, technologies from the moment they were used for any sort of instrumental purpose? While this may seem a plausible suggestion at first, Gray, et al (1995) argue that such examples can only be considered as cyborg through techno-hindsight, for the simple reason that these sorts of non-mechanical and non-computerized interactions do not consist of the infinite kinds of complex, interconnected webs which exist in cyborg society today. In other words, in writing this dissertation I rely on numerous computer databases and my own computer, all of which are connected to the university's server, which is itself connected to other massive networks. Of course, all of these networks are dependent on the local power grid, and so on. A pre-human using a stone tool is interacting only with that stone.

Cyborgs and Popular Culture

Popular culture is ripe with examples of cyborgs, especially human-machine hybrids capable of phenomenal physical and/or athletic feats, and the earliest cultural studies works on technology and culture clearly recognized the importance of the relationship between science fiction and social realities (deLauretis, Huyssen, Woodward, 1980). In fact, over the past 20 years a wave of cyborgs and images of technologized societies have entered into the American consciousness by way of television and films. While the portrayal of technology and cyborgs in most of the sources I discuss here do not currently have much at all in common with even the most elite athletes (i.e. there are no android competitors), they do share a talent for performing feats that most of us "low-tech" cyborgs find amazing to behold, and which move us to imagine a world populated by various sorts of post-humans. On another level, just as many cinematic and small-screen

cyborgs appear to be paradigmatic examples of human-machine interfaces, one can certainly consider world-class athletes to be among the best “real world” examples of intimate human engagements with technology

Perhaps the most commonly cited example of cinematic cyborgs is the 1982 Ridley Scott film Blade Runner, in which Harrison Ford stars as a retired seeker and destroyer of replicants, androids who are indistinguishable from humans, and who have unexpectedly turned on their creators. In an effort to stop their pre-programmed expiration dates of three years, the replicant leader tracks down and kills his maker, all the while battling the intense, human-like emotions that he cannot control. The twist in the plot is that Ford’s character, Decker, may himself be a replicant, and in fact the director’s cut of the film all but confirms this possibility. While Haraway’s (1985) work essentially gave birth to cyborgology, it is worth noting that films like Blade Runner were already blurring the lines between humans and machines years before academics turned towards the post-human.

While the replicants in Blade Runner were humanized androids, many cinematic cyborgs originated as humans who, after some catastrophic event, were cyborgified by some sort of government agency to serve their wishes. In the film Robocop (Verhoeven, 1987), for instance, Peter Weller’s character is a policeman who is refitted with a metallic exoskeleton and other computerized sensory augmentations after a near fatal shooting. The scientists do nothing to cure the amnesia that accompanied his injuries, however, and eventually the cyborgification goes awry when memories from his past life come flooding back. Robocop brings up an important point related to the increased

technologization of elite athletes While athletes generally do have control over how their bodies are technologized, there is, as Hoberman (1992) points out, an element of this type of creator-guinea pig component between the conglomeration of sport scientists and athletes, legitimate and otherwise While the former East German sports machine certainly comes to mind, there are less devious examples The Olympic Training Center in Colorado Springs, for instance, conducts numerous tests in which athletes are hooked-up to electrodes and asked to perform various tasks, and athletes are often recruited to test various equipment and nutritional substances

A similarly dystopic vision of technologized sport on the big screen was the film Rollerball (Jewison, 1975), which starred James Cann as an aging legend of an ultra-violent blend of roller derby and hockey The object of the game, a spectator-driven, media-created endeavor which included a short oval track, competitors on roller skates wearing spiked gloves, and motorbikes, was to hurl a small metallic sphere into a goal-receptacle without being pummeled or run over in the process Though not technologically enhanced in the same manner as Robocop, Cann's battle scarred character was still a product of a thoroughly technologized, self-contained bloodsport, and like Robocop he was forced to challenge the ruling technocracy to regain his sense of agency

The notion that we are all cyborgified, and intimately tied into technological interfaces, is brought to cinematic life in the recent film The Matrix (Wachowski, 1999), which stars Keanu Reeves as a virtual savior named Neo who is rescued from the computer-generated world of human enslavement by Laurence Fishburn's character,

Morphius In essence, the matrix is a program created by AI machines where humans are born and raised as a source of energy, all the while plugged into the matrix Once rescued from the matrix by Fishburne, Neo retains the input port he was born with, which is now used to allow him to hack back into the matrix so that it may be destroyed and humanity liberated All of the characters in the movie on Morpheus's ship exist in the "real" world, and when they die in the matrix their bodies die next to the computer console The fuzzy boundary between the real and virtual worlds is an explicit theme throughout the film The de-privileging of physicality is also a prominent topic, as illustrated by this dialogue from a scene which features Morpheus-as-master training his techno-pupil within the confines of a computer simulation

Morpheus: How did I beat you?

Neo: You're too fast

Morpheus: Do you really think that my being stronger or faster has anything to do with my muscles in this place?

In the end, Neo finally realizes his full cyborg potential as "The One" when he attains the ability to manipulate the Matrix and move freely between "reality" and virtual" worlds

While many Americans have been introduced to technologized worlds and cyborg beings through motion pictures, television programs like the 1970s shows The Six-Million Dollar Man and The Bionic Woman introduced the American public to the possibilities of blurring the boundaries between humans, machines, and animals (there was Max, a bionic dog as well), once again long before Donna Haraway's (1985) seminal work on cyborg theory The opening segments of these two programs demonstrated the

fantastic athletic feats made possible by such intimate interfaces with technology On one hand, Steve Austin was shown taking a treadmill far beyond its capabilities as the narrator calmly stated that this newly created cyborg would be “better than he was better, stronger, faster ” Interestingly, this phrase is noticeably similar to the Olympic credo higher, faster, stronger As for Jamie Summers, it is another study in itself to examine why the bionic woman was not shown running or jumping, but crushing a tennis ball¹ Nevertheless, both of these cyborgs were shown to the audience not as the super-secret-techno-agents they were designed to be, but as complex meldings of humans and machines, living and mechanized

Outside the science fiction genre, perhaps the best sports-related film depicting cyborgs is Rocky IV (Stallone, 1985), where Sylvester Stallone travels to Russia to fight Ivan Drogo While Rocky is shown running through snow drifts, lifting piles of boulders, and doing inverted sit-ups in a Siberian barn, Drogo trains indoors and is surrounded by sport scientists who measure his punching power with computerized equipment and inject him with steroids Despite its cold war stereotypes of the Russian sports machine and the supposedly brutish nature of Soviet athletes, the film sends the clear message that “natural” athletes with a sense of rugged individualism will ultimately win out over technology Further, to the extent that it is tied with Soviet training methods, technology itself is demonized in the film

More recently, television advertisements have brought real-life cyborgs into the American sport and consumer consciousness Perhaps the most striking example is an ad for the Adidas shoe company which features a female runner apparently beginning a

track workout The clip starts with a close-up of the athlete, her labored breathing filling the viewers ears, and as the camera slowly pans back, the runner's legs are revealed to be prosthetics-human legs blending almost indiscernibly with plastic and steel The words on the screen read "Long Live Sport " In summary, cyborgs have been gestating in the popular consciousness of American culture for far longer than the academic work on technology and culture might indicate, and the visions of a malleable "human" body and an increasingly technologized existence that television, films, and the media, in general, have provided make arguments that elite 21st century athletes must remain untainted or "natural" seem tenuous at best

Technology and Embodiment: From Cartesian Split to Techno-phenomenology

Charles (1998) argues that contemporary Western societies generally view the body from a techno-scientific perspective, as a malleable product forged in the imagination of the larger technoculture This vision of human embodiment is magnified in Olympic-level sport by the close relationship between athletes and the medical community and, as Hoberman (1995) states, "From a technological standpoint, the key relationship within the world of high-performance sport binds athletes to their physicians" (p 205) However, it is important to recognize that this position is only the most recent in a succession of ways of thinking about human corporeality and embodiment, and thus any investigation of athletes and technology must trace how the body has been historically conceived and socially constructed (Charles, 1998) As well, in so far as elite athletes' experiences of their bodies are altered by technologies, whether feeling a "oneness" with

an implement or physically altering their bodies through technological means, a more in-depth treatment of the phenomenology of the body and technology are also necessary.

One relative constant throughout the history of western cultures has been the attempted separation of the mind and body in a hierarchical manner with one holding dominion over the other (Charles, 1998), and some argue that the influence of this mind-body dualism remains strong in many aspects of western society (Morgan & Meier, 1995). As far back as late Greek culture, the notion that the mind was the “captain of the body vessel” (p. 380) emerged. Mind-body dualism, as it became known, was first proposed by Plato, who in *Phaedo* describes the mind as the pure essence of human existence, and the body as an impediment to intellectual progress because of its physical, and presumably secondary, needs. While still dualist in nature, the middle-ages gave rise to the merging of the mind with the soul, and the idea that the healthy body housed the eternal spirit. The body continued to be thought of as an inferior component of the self, but it was viewed as something to be nurtured and cared for.

A more holistic view of the relationship between the mind and body arose during the Renaissance, when advocates of humanism promoted a new respect for human corporeality. The body was no longer an instrument that served the mind’s purposes, but a “vehicle for creative expression and for living fully in the here and now” (Morgan & Meier, 1995, p. 381). This move towards a sense of mind-body wholeness was subsequently interrupted, however, by the rise of Cartesian dualism. Extending Plato’s radical distinction between the rational mind and the brute physicality of the body, Descartes argued that the mind represented the authentic and eternal human self, while

the body functioned as an unconscious machine, separate from yet controlled by the mind (Meier, 1995)

The scientific revolution of the 17th century witnessed a maintenance of mind-body dualism, and the increased understanding of human anatomy that emerged during that period fostered new comparisons between physiology and machinery centuries before the industrial revolution. As Thomas Hobbes (1651, quoted in Kimbrell, 1992) stated, "For what is the heart but a spring, and the nerves but so many strings, and the joints but so many wheels, giving motion to the whole body" (p. 59). This reduction of humans to their separate mechanical counterparts was tied to an ongoing movement towards positivism and Enlightenment rationalism, and the general view that science and technology were the sole valid sources of knowledge and truth (Rintala, 1995). It is during this period that the dominant contemporary view of the body is rooted, and the standards by which minds and bodies were deemed healthy or unhealthy became tied to their ability to function with the efficiency of machines.

In contrast to the alienated relationship between the mind and body popularized by Cartesian dualism, existential phenomenologists in the mid-20th century, most notably Merleau-Ponty (1962), argued that humans are characterized by an "embodied consciousness." According to Merleau-Ponty, the body is the point of insertion in the world, and it is the "lived body" which provides the means by which we perceive and act upon/are acted upon by the world. Put more eloquently, the body is "the locus of a dialectical relationship with the world and the fabric into which all objects are woven" (Meier, 1995).

While several scholars have offered phenomenological analyses of the body (MacGillavray, 1986; Merleau-Ponty, 1962), they do not address times when technology becomes figural in the experience of the body. In other words, a pole-vaulter's implement may be an important part of how he or she experiences his or her corporeality during certain moments in the event. In Existential Techniques (1983), Ihde examines how human-technology interactions influence human self-understanding, and argues that not only are human perceptions of the world and our bodies altered by technology, but that our view of ourselves as humans is changed as well.

According to Ihde (1983, 1990), our encounter with technology takes three distinct but fluid forms. First, technology may be viewed as the mediator of our experience of the world, and thus technology becomes the lens through which we encounter and experience the world (I-technology-world). Applied to sport, a woman rower does not directly experience the water she navigates her boat through. Rather, she experiences the water, as well as her body, through the oars and wooden vessel inside which she sits. Second, technology may be taken into the embodied self, in the process becoming an extension of the body [(I-technology) > world]. Using the rowing example, the rower's experience is one of oneness with the boat's technology, and she may be unaware of where her arms end and where the oar begins. This type of phenomenon seems similar to what athletes in the "zone," or flow states, describe. Finally, the "experiential terminus" (Ihde, 1983, p. 142) may be with technology, which is itself intentionally related with some other aspect of the world [I > (technology-world)]. Applying this to the rower once more, the athlete may be practicing in a mechanical simulator, where what she feels as "water resistance"

against her oar and through her tiring muscles is actually the result of the tightening of a gear so as to make the act of rowing more difficult. In short, while the rower is directly present to the oar, she is removed experientially from the world the oar affects.

Regardless of the type of experience the human-technology encounter takes on, Ihde (1983) argues that humans, technology, and the external world are perpetually locked in a multi-directional engagement. This notion is best illustrated by the following:

human<----->technology<----->world

This representation of the human/technology/world relationship necessarily implies that humans' understanding of themselves is not removed from technology, but intimately connected to it. Implicit in Ihde's (1983) idea that humans are "technologically textured" (p. 3) for most of their lives, then, is the fact that members of particular technocultures define and identify themselves in part through the technologies they interface with. Applied to the present investigation of elite track and field athletes, we can say that advancements in track and field technologies transform athletes' identities, as well as their perceptions and experiences of what Merleau-Ponty (1962) calls our "being-in-the-world"—our sense of the embodied self moving through space. Ihde's analysis of how our existence in a technoculture affects our experiences and identities will also be important in the process of narrative configuration because it provides phenomenological insight into when, how, and to what degree participants in this study experience their lives "technologically" and "naturally."

Who wants to be a cyborg?: Technology and the cyborgification of contemporary elite sport

Sport technologies and the quest for better performance

It would be beyond the scope and intent of this study to trace the introduction and growth of technology in high-performance sport in a comprehensive manner. However, a brief description of the relationship between the changing nature of the American socio-cultural environment and the rise of sport technology will help provide an historical context for the subsequent analysis of contemporary sport technologies. As well, I hope to illustrate how sport fits into the previously discussed relationship between technology and culture, and how athletes often find themselves directly on the faultlines between sporting and technocultural ideals.

In his groundbreaking historical analysis of the changing ethos of sport, From Ritual to Record: The Nature of Modern Sport, Allen Guttman (1978) describes how the largely sacred and minimally technological competitions of the Greeks mutated into a secularized, increasingly technological quest to exceed measurable performance standards. In fact, the modern Olympic Games have not only welcomed, but depended on various technological innovations from the outset, whether one considers improvements in athletic equipment or the enhanced railroad and steamship technologies needed to support the growth of the Games (Tenner, 1996). More recently, IOC member Dr. Walther Troger commented that the choice of Atlanta for the 1996 Games was extremely wise because the city represented “a touch of American Olympism melded to 21st-century technology” (Lucas, 1992, p. 31). Olympic and other international

competitions, then, have never been immune from the march of socio-cultural technological advancements, but undeniably connected to them. The importance of this point will become clear in my discussion of the debates over sport technologies, and the notion that technology threatens the “human” element of elite-level sports like Olympic track and field.

As Rintala (1995) states, the influence of science and technology on high-level sport is “undeniable” (p. 62), and it is certainly no exaggeration to say that athletes owe much of their steadily increasing performance standards to technological innovations (Rintala, 1995, Tenner, 1996). By some accounts, however, the increased emphasis on performance predated the invention and introduction of many sport technologies. For example, even though physical education theorists of the early nineteenth century like J. C. F. GutsMuths attempted to measure, compare, and record running times, he was quick to admit that the pocketwatches of his time were unfortunately incapable of registering smaller time units (Eichberg, 1982). Eichberg (1982) argues that it was not the stopwatch that provided the impetus for the movement from exercise-based activities to competitive sports, but rather that this new technological development became a device which symbolized the larger societal trend towards “striving for achievement, measuring that achievement, and the dynamics of time” (p. 47). Hence, while sport is by no means merely a mirror of American society, it has certainly absorbed its ethos of quantifiable progress and increased technologization. Eichberg (1982) also describes the technologization of gymnastics, and points out that while the outcome was not an emphasis on quantifiable performance as it was in athletics, a similar ethos emerged that

promoted a new kind of formalism which necessitated further innovation. Thus, as Eichberg (p 55) surmised, "A new type of sports behavior as part of the industrial change of society created a new technology "

Applied to the present investigation, I would make a similar argument regarding the increasingly cyborgified character of Olympic sports like track and field, and suggest that technologized athletes represent an outgrowth of the larger technoculture of American society, in particular, and the high-tech revolution in all areas of sport. It is also important to view the relationship between sport technologies and the larger technoculture as fluid and reciprocal in nature. Athletes may discover new technologies from watching science-fiction films or news reports on genetic engineering, and a farmer in Iowa may see how his livelihood might be improved through the novel use of some sort of technique or innovation. This said, it is also important to recognize the tension that exists between the larger American technoculture and the paradox of performance in elite sport. On one hand, the attitude within the United States generally seems quite in line with Borgmann's (1984) notion of the device paradigm, with an overwhelming emphasis on technologically-procured efficiency over the use of less technological means. In addition, technology is considered meaningful or significant to the extent that it *disemburdens* us, and frees us from the effort required to obtain that which the technology delivers. It would be difficult to imagine, for instance, desiring a computer that functioned less quickly and efficiently, and that required more effort than the current model to complete a given task.

In sport, however, the drive towards a completely technologized method of operation contrasts with the existence of what Suits (1995) calls a "lusory attitude." According to Suits (1995), sport seems to demand an arduous journey of its competitors. Therefore, athletic contests require the acceptance of prohibitory rules that rule out more efficient techniques for reaching a given end. Even the highest levels of sport often involve "the voluntary attempt to overcome unnecessary obstacles" (p. 11), because a failure to do so would result in the "de-skilling" of athletic performance (Miah, 1999). For example, while attaching springs to the bottom of one's shoes would drastically improve performance in the high jump, this would likely undermine the emphasis on precise form and technique that makes the event challenging. In short, though tangential to the current investigation, those concerned with the future direction of sport will have to sort out the degree to which anything resembling a lusory attitude will continue to exist in an era of increasingly cyborgified track and field competitors, who are themselves literally infused with, and embedded in, the ideals of American technoculture at large. While it may even be true, to some extent, that most Americans have "surrendered" to technology (Postman, 1992), the survival of anything resembling the current structure of Olympic sport depends, ironically, on strategic resistance against further technologization, or perhaps certain types of technologization.

Despite this unresolved tension, it was inevitable that technologies originating outside sport would eventually infiltrate its borders. As Froes (1997) notes, the use of high-tech materials is common in the construction, automotive, aerospace, and biomedical industries, and the millions of dollars spent in the research and development of these

technologies is justified by their ability to improve performance Froes (1997) also states that the materials used in the production of equipment and implement technologies have switched from natural, including wood, twine, and rubber, to human-made materials, most notably reinforced metals, polymers, and synthetic-hybrid substances

Of course, the promises of increased technologization in sports like track and field have not been limited only to improvements in materials and design For example, almost twenty years ago Crawford (1982) proclaimed the emergence of the “age of the chemical athlete” (p 668), and chronicled several methods by which athletes in the early 1980s already defied the term “natural,” including the use of steroids, blood doping, and legal supplements like bee pollen and ginseng Crawford also noted numerous other equipment technologies, as well as the role of sport scientists in the technologization process, and although some of his examples now seem dated compared to more recent debates over genetic engineering and the like, he nonetheless makes the key connection between sport and other cultural advances As he states, “Just as industry, agriculture, transportation, and daily life itself have been revolutionized by the technological developments of the last 100 years, so too has the world of sports” (p 670).

As is the case with countless other cyborgified practices, many technologies currently used in sport have militaristic origins As Bjerklie (1993) notes, materials and equipment primarily designed for top secret war machines have steadily filtered into sport, a trend that began after World War II, when advances in the flexibility, stability, and weight of alloys and previously bulkier metals were first used by pole-vaulters to replace bamboo poles with pliable fiberglass Eventually, elite sport became a means of demonstrating

U S technological prowess, especially where the former Soviet Union was concerned. At the opening ceremonies of the 1984 Olympic Games in Los Angeles, for instance, a starred and striped man launched himself into the air with the aid of a jetpack in a symbolic display of Cold War space-age ingenuity.

There is other evidence of the tie between the perceived superiority of American technoculture and elite sport. Prior to the 1984 Games in Los Angeles, researchers for the U S Olympic Committee found that American athletes were more successful in "low-tech" sports such as running and swimming than in seemingly more high-tech sports like kayaking and cycling, an irony not lost on the elite sporting community (Bjerklie, 1993). For example, Eric Haught, chair of the sport science and technology commission for U S. canoeing and kayaking teams, stated that, "It seems paradoxical that one of the most technologically advanced nations in the world performed worse in just those events in which it would be expected to excel" (quoted in Bjerklie, 1993, p 24).

Haught's general point is well-taken, but what he failed to realize is the actual degree of technologization of modern track and field athletes, an oversight that is almost understandable due to the lack of flashy, or in some cases even *observable*, technologies in the sport. While the differences in materials and design between older kayaks and bicycles and newer models are readily apparent to most observers, the cyborgification of athletes, particularly in the running events, is more subtle. Or *is* it? Of course, there have been functional improvements in track spikes over the years, primarily with respect to weight. Moreover, the rubberized "Mondo" tracks of today are clearly faster than the dirt or cinder surfaces of the mid-20th century. While the glaring technological advances

similar in aesthetic difference to the solid disc wheel and aero bars in cycling may seem less obvious in track and field initially, a closer analysis reveals otherwise. For example, Jesse Owens and Michael Johnson are often compared on the basis of their similar running forms, but Owens had neither the perfectly sculpted body nor the super-light golden spikes of Johnson. With the growing popularity of space-age running suits that resist wind drag and the multi-colored sunglasses that allow sprinters to fully relax their faces in full sunlight, the portraits of 21st Century athletes continues to display a more technological aesthetic.

Interestingly, there have also been occasions when the technologies themselves have determined the suitability of an athlete for *its* design and specifications. For example, Bjerklie (1993) notes that the javelin was an implement that originally privileged strength over precise technical prowess. Thus, even throwers with sub-standard technique could perform well by using sheer force to “muscle” the javelin. Then, in the early 1980s, the implement was redesigned to be lighter and more aerodynamic and the emphasis shifted to finesse, for the perfectly executed throw could now outdistance the technically deficient throw of greater force. The redesigned javelin had unforeseen consequences as well, however. Once more athletes improved stylistically, the javelin began to travel past the infield and dangerously close to spectators and athletes on the opposite end of the stadium, and in 1986 the “de-engineered” (Bjerklie, 1993, p. 29) model marked the return of power throwers to the upper echelons of the event.

Of course, there are examples of sport technologies that have emerged not from secret military laboratories, but from individuals or groups who, out of necessity,

entrepreneurialism, or simple creative passion, concocted something of use to elite athletes (Holt, 1998) Perhaps the most far reaching of such endeavors was the homemade rubber waffle soles that the Oregon track and field coach, Bill Bowerman, created on his wife's waffle iron, and which became the basis for Nike's early success from the kitchen counter to the running feet of millions One can imagine such humble, cost-effective beginnings for things like customized prosthetics as well, but there are limits to what can be created on a shoestring budget in the basement. I would argue, therefore, that the cyborgification of elite track and field is and will continue to be intimately tied to issues of access, especially when the technologies in question are created by multinational or transnational corporations While geneticists admit that athletes will be among the first to experiment with cutting-edge gene therapy and genetic engineering procedures (Zorpette, 1999), the danger is that many of these advancements are privately funded and essentially open to the highest bidder (Rifkin, 1998) This said, there may still be advantages in some track and field events for "low-tech" athletes Debates over genetic differences notwithstanding (e g Entine, 2000), it is still the 5'4" Ethiopian runner Haile Gebrselassie who continues to dominate distance running, and a recent biographical film of his life, entitled Endurance, illustrates that what Americans would label as technological deficiencies may be considered as benefits to a world-class runner While many of his classmates either lived in the city or took some form of transportation, Haile ran the six miles to and from his family's farm each day, and he traveled not on hard asphalt but softer dirt roads In America, of course, even less technological means of performance enhancement and rehabilitation, including

nutritional supplements and visits to massage therapists, have increasingly become symbolic of a wealthy leisure class

Increased access to technological innovations has also been partly responsible for the relatively recent rise in women's sport participation, although its roots go back much further. As Kramarae (1988) points out, despite an enormous amount of opposition from nineteenth century patriarchy, the bicycle became a vehicle for women's empowerment because it allowed women increased mobility even though they were discouraged, often physically and with no small degree of hostility, from challenging the patriarchal notion that technology, transportation, and exercise were strictly the business of men

At first, women's sport technologies were predominately aesthetic improvements or stylish alterations (e.g. changing colors) of men's equipment. This was, perhaps, understandable, for as Nyad and Hogan (1998) state, "We are in the habit of categorizing machines, gadgets, and all things technical to 'male' (p. 58). However, the growing numbers of active women over the past twenty years have brought substantial changes in the fit and function of gender-specific sports equipment and materials. Nike, for example, the company that designed the first women's running shoe in 1972, now conducts a variety of physiological and biomechanical tests specifically to advance shoe technology for women, and the Northface wilderness company employs women to test products designed for the specifications of women's bodies (Nyad & Hogan, 1998). Ironically, the first jogbra, invented in 1979, was created by sewing two jockstraps together upside down (Nyad & Hogan, 1998). In short, while some technological innovations in women's sport equipment have been merely fashionable, many others

have greatly facilitated a less awkward, more efficient engagement between women, their bodies, and sport

Technology has also been hailed by some women as a potential equalizing force in sports activities, especially in those events where brute force is less important to performance than an ability to manipulate, or to otherwise interface with, the machinery and devices of modern sport. For example, Bill Koch, an owner of an America's Cup team, states that, "technology is the key to winning in sailing, not strength" (Nyad & Hogan, 1998). The efficiency with which sport technologies operate is an important point here, because it is closely tied to the general transformation of sport from a qualitative endeavor to a more quantitative, measurable domain. Further, interactions between women athletes and technology has the potential to shake up gender roles in sport, and perhaps even make what we conceive of as "masculine" and "feminine" bodies even more problematic (Gray, 2001). Finally, it raises the interesting question of whether, in a sporting environment where "technology is the key," women are gaining as much ground as the importance of the athlete his or herself is losing.

Along with issues of access, another major dilemma faced by those involved in sport is how to reconcile the potential benefits of technology with the risks. As Rintala (1995) states, "Technology has enabled athletes to do some things more safely, but this appears to be a double-edged sword" (p. 64). Tenner (1996), for instance, points to two major "unintended consequences" of sports technology: (1) the rise in chronic health problems and (2) the tendency of some technologies to "de-skill" performances (Miah, 1999). While various sport technologies have led to increasingly indestructible cyborg athletes

and a dramatic reduction in the number of catastrophic injuries in collision sports like football, they have also led to a rise in serious and chronic injuries and ailments. As Tenner (1996) points out, contemporary football helmets and padding provide far better protection than equipment in previous years, but the rehabilitative technologies now available have allowed athletes to return to competition at the cost of extended bouts of pain and repeated surgeries later on. More disturbingly, these technologies, combined with the increased use of various strength-building technologies, steroids the most notable, have turned the game into a spectacle of high-impact collisions (Tenner, 1996).

Tenner (1996) also notes that some track and field technologies have had similar unexpected drawbacks. The improved shock absorption and stability of new running shoes allows for a more comfortable and efficient ride over substantially increased miles, but the accompanying stress on joints, muscles, bones in the lower extremities puts competitive athletes at greater risk for injury. Of course, the cyborgification process always has a response to such liabilities, and again one can point to enhanced rehabilitative technologies from over the counter pain remedies to cortisone injections as examples of how athletes often rely on further cyborgification to counter the unintended side effects of previous innovations. Nonetheless, Tenner's (1996) assertion that many new technologies facilitate improved performance at the expense of safety is magnified when we examine issues surrounding technologies like genetic engineering, because here the danger is not merely physical injury, but the irreparable alteration of the most basic elements of human physiology and the obvious potential for human rights abuses (Miah, 1999).

Tenner (1996) also argues that the introduction of some technological innovations has resulted in the “de-skilling” of the very activities they were meant to improve. Along with the aforementioned example of the javelin, Tenner (1996) points to examples outside of track and field, the most interesting of which concerns the sport of professional golf. While other sports have been unable to implement consistent standards regarding the use and restriction of new technologies (Gelberg, 1998), the Professional Golfers Association (PGA) and its players have taken the offensive against the use of new equipment that could compromise constituent parts of the game. The most advanced titanium balls, for example, have been unanimously banned because their extended distance would make many courses obsolete (Froes, 1997, Tenner, 1996). In fact, the PGA has established an absolute limit of 296.8 yards as the maximum flight distance of a ball when struck by a mechanized driving machine (Tenner, 1996).

While the notion that many sport technologies carry with them “unintended consequences” is certainly a credible one, others have framed technology in a far less ambivalent fashion. Perhaps the harshest indictment of technology involves the claim that the unrestrained flow of technology into sport may ultimately contribute to the “dehumanization” of athletes (Hoberman, 1992, 1995, Rintala, 1995). From this perspective, the emergence of an explicitly cyborgified sport culture is a tragic step toward the demise of sport in its present form. For example, in his book entitled Mortal engines: The science of performance and the dehumanization of sport, John Hoberman (1992) provides an in-depth analysis of how technology and the sport sciences have essentially been aimed at the creation of sportive Frankensteins who rarely question the

“win-at-all-costs” attitude characteristic of sport’s upper echelons Charles (1998) echoes Hoberman’s (1992) dystopic view of the role of technology in elite sport, and argues that high-level athletics has become “an exercise in human engineering aimed at transforming the human body into an efficient, inexhaustible machine” (p 386) To treat the body technologically is to also to reduce it to a means to an end, which in this context means a tool for enhanced performance. Simon (1994) also worries that some technologies may undermine our moral framework for judging people, particularly if traits like character, virtue, and responsibility become attainable through the use of drugs, genetic manipulations, or “psycho-doping”

It is therefore arguable that the biggest dilemma faced by those concerned with the influx of sport technologies is determining which technologies should be allowed in contests and which run counter to what has often been termed the “human” element of sporting contests (Gelberg, 1998, Rintala, 1995) As Miah (1999) states, “should it be possible for the athlete to be replaced, whether by mechanical simulation or by biotechnological engineering, the effects are overwhelming and perhaps disturbing” (p. 11-12) I agree that the replacement of the athlete in totality, even if it were possible, would be troublesome However, assertions that elite athletes have become laboratory specimens in the techno-sport era (Hoberman, 1992, 1995) and that in the process the “human dimensions” of sport have been ignored, if not lost (Rintala, 1995, p 68), fail to clearly establish where the human ends and the machine begins Further, many technologies threaten traditional notions of the untainted, “natural” athlete, and issue serious challenges to our ideas of what constitutes “human performance” as well

It is for this reason that a small contingent of scholars have begun to apply cyborg theory to sport (Cole, 1993; Pronger, 1998). Coming mainly from a critical postmodern perspective, these individuals have defended the emergence of a cyborgified sport, and propose a postmodern take on the body that would allow athletes the freedom to defy the boundary projects of modern sport, particularly those between animals, humans, and machines (Pronger, 1998). That so few researchers have attempted to apply the interdisciplinary work in cyborg theory to sport is surprising, for as Pronger (1998) argues, sport has been an important space in which boundaries are “created, maintained, transgressed, or destroyed” (p. 281). In fact, Pronger (1998) states that the cyborg is perhaps *best* exemplified by the modern elite athlete, “fine-tuned and chemically manipulated by techno-science, they are circuits in the network machine of the high performance sport system” (p. 284). As I have argued elsewhere, reconceptualizing athletes as cyborgs allows us to reframe sports like track and field as spaces that are inhabited by sportive hybrids, as opposed to arenas populated by supposedly “untainted” human athletes (Butryn, 1999b).

Viewing athletes as cyborgs also avoids the impossible task of trying to determine what percentage of a given performance is attributable to the supposedly natural athlete and what percentage is owed to various technological augmentations. Rintala (1995), for example, asks, “Should the athlete also thank the physiologists, psychologists, biomechanists, engineers, and pharmacologists—those individuals who may have contributed to the 5% difference that resulted in the outcome” (p. 71)? Seen through a cyborg lens, however, I would argue that empirically and objectively determining which

proportion of an enhanced athlete's performance was due to human effort and which to technology would be essentially hopeless, for there are no "technometers" capable of determining the percentages of technology and good, old-fashioned flesh and blood that contribute to the outcome. Hence, arguments over whether Performance A is less worthy of reward than Performance B because the former is deemed to have been more reliant on technology than the latter would be futile, for how could one possibly even begin to reliably determine the precise level of technologization of a given athlete or performance? Accepting the complex web of sport cyborgification helps us move past questions of mere ownership, and allows us to pose questions related to what kinds or forms of technologies a given sporting community will permit, and which it will find incommensurable with its collective project (Butryn, 1999b).

A paradigmatic shift towards viewing athletes as hybrid beings also addresses what has been called the paradox of the performance ethos of elite sport (Franklin, 1996). Put simply, the performance ethos involves elite sport's overwhelming emphasis on quantifiable performance, which drives athletes to employ the most efficient means available to surpass previous standards (Hoberman, 1992, Segrave, 1993). The paradox lies in the fact that, while athletes are encouraged, rewarded in fact, when they seek out new, efficient methods of improving performance, they are often punished when caught doing so (Franklin, 1996). From this perspective, openly technologized athletes are violations of the rigid boundary projects of modernity, boundary projects that have been vigorously defended in track and field through policies and testing procedures. While it is important to remember that some sport technologies, performance-enhancing drugs for

instance, are illegal, sport bureaucracies have been unable to devise a credible means of justly determining what sorts of technologies and technologically-enhanced performances should count as meaningful, and which should be restricted

Some have even argued that cyborg sport provides an alternative to the performance ethos itself (Cole, 1993, Pronger, 1998) While cyborg athletes might seem predisposed to become complicit in the increasing emphasis on performance in elite sport that has already transformed events like the Olympics into a scientific and nationalistic quest for world records (Hoberman, 1992), Haraway (1991) reminds us that while cyborgs may be the “illegitimate offspring of militarism and patriarchal capitalism” (p 151), they are also capable of betraying their origins The implications of this traitorous potential for sport is that cyborg athletes, despite the drive to produce new performance standards, may discover the promise of problematizing one of the major boundary projects of elite sport—the border between performance and pleasure On another level, the sheer volume of cyborg technologies available to elite athletes today could yield a new sporting population that expands the definition of “performance” to include a greater breadth of experiences and artistic endeavors

As Pronger (1998) argues, while the act of cyborgification is potentially a valuable political project, to the extent that one remains trapped within the performance ethos of sport and its “resourcing of the body” (p 292), it fails as a truly viable postmodern project To engage in such a liberating project, Pronger argues for the emergence of a cyborg sport which realizes the pleasures of what he calls the “wilderness of Eros” (p 292) For this reason, he argues that elite athletes should wrest control of the

cyborgification process from the “sport-industrial-techno-science-nationalistic complex” (p 286), a process that could lead to a de-centralization of the performance ethos in elite sport. While quantifiable performance will still exist, sporting cyborgs may also help create a sporting world based more on collective pleasure than on aggressive domination. Rather than conceptualizing cyborg athletes and technologies in strictly instrumental terms, a more powerful, ironic act of transgression would involve an “erotic, primordial, pleasure seeking” (p 291) experience in the course of competition. Pronger (1998) points to events such as the Pink Flamingo Relay at gay swim meets as an example of the sort of playful transgressions necessary for cyborg athletes to challenge both the corporeal boundary projects of modern sport and the performance ethos itself.

While I generally agree with the spirit of Pronger’s (1998) argument here, I have reservations over his suggestion that, despite the acknowledged risks, athletes should have free reign over cyborg technologies, and be left to enjoy the “responsible use” of performance enhancing drugs and the like. While the current practice of “body McCarthyism” (Kroker & Kroker, 1987) and physiological surveillance involved in track and field is clearly problematic, I am not certain that a solution which could easily devolve into a chaotic, technological free-for-all is the answer. Although it is not possible to do so here, I would argue that some ways of being cyborgified in sport might involve greater opportunities for agency and participation than others. Further, although the freedom to explore or pollute the boundaries between humans, animals and machines does not preclude an engaged public practice and sense of sporting community, I would argue that the performance ethos of elite sport, and the strong weight of technological

rationality which accompanies it, could contribute to a frighteningly narcissistic and oppressive form of cyborg sport. In addition, while it is less an issue in this study due to the privileged nature of the participants, there are important class and access issues that must be addressed if cyborgified sport contests are to become anything other than exclusive arenas for the wealthy. What will be necessary, regardless of the outcome, is a democratic engagement in which athletes have an opportunity to freely voice their perceptions and share their experiences.

Modes of cyborgification in sport

As Mitcham (1994) notes, "The rich complexity of the subject (technology) forces one to adopt at least a provisional classifying or categorizing scheme" (p. 154). In the course of examining the various ways and degrees that contemporary athletes interface with technology during the cyborgification process, it is therefore first necessary to survey the plethora of sport technologies available to today's competitors, a task which will be useful in distinguishing between different ways of being a cyborg athlete. Miah (1999) also points out that there is presently no coherent conceptual framework that might aid in differentiating between sport technologies, and for this reason I will sketch out a tentative typology of sport technologies that athletes might use in their own particular cyborg transformations (Butryn, 1999b). The classification system I have devised consists of five general types of sport technologies, each of which may include several different sub-groupings under the main heading. These five categories consist of 1) **self** (physical and psychological) technologies, 2) **landscape** technologies, 3) **implement** technologies, 4) **rehabilitative** technologies, and 5) **movement** technologies. While some of the

technologies discussed below have yet to make an impact on elite track and field, an understanding of the many types of sport technologies may be helpful in obtaining a better perspective on the technological options that athletes in the present study will eventually have access to

As I have argued previously, *self* technologies represent the most obvious, and for many sport scholars the most disturbing, form of cyborgification, for these technologies have the potential to fundamentally and often *permanently* alter an athletes' physical and/or psychological makeup (Butryn, 1999b) While the various banned performance-enhancing drugs are the most notorious of these technologies, I would argue that *self* technologies encompass other kinds of athletic augmentations which are the subject of far less discourse Hence, along with chemical innovations, I classify surgical procedures, prosthetic/bionic limbs, sport psychological interventions, and genetic engineering as other types of *self* technologies While the presence of certain *self* technologies in sport may seem too futuristic (e g bionic prostheses, genetic engineering, etc), scientists working on a muscle-building vaccine derived from engineered genes have already recognized the implications of their work for sport As H Lee Sweeney, the head of a University of Pennsylvania team working on the vaccine, states, "If in 20 years these viruses are available to treat muscular disease, they will be available to athletes seeking to gain a competitive edge" (quoted in Zorpette, 1999, p 31)

Williams (1997) echoes Sweeney's predictions, and provides a detailed analysis of cyborg technologies available to athletes in the "'transhuman bodyshop' of late 20th century [and early 21 century] medicine " While he focuses primarily on what

postmodern medical technologies offer to those who desire to take control of the cyborgification process, Williams's (1997) analysis provides some insight on the close relationship between sport scientists, cyborg athletes, and the sporting body, as well as further elaboration on some of the *self* technologies mentioned above. In particular, Williams (1997) describes five types of bodies created by cyborg medical procedures, including the *plastic* body, the *bionic* body, *communal/interchangeable* bodies, *genetically engineered* bodies, and *virtual* bodies.

In the world of cyborg medicine, bodies are *plastic* in that they may be molded to the patient's specifications. Through various forms of cosmetic surgery, undesirable marks of perceived morphological flaws may be corrected, while other physical characteristics may be enhanced (Williams, 1997). Further, researchers assert that bodies of the future will be healed and reconfigured by new kinds of plastic materials. For example, scientists have recently had remarkable success using biodegradable plastic "scaffolding" to form a base upon which living cells are planted. The plastic model, in the shape of the desired body part, is eventually enveloped by new tissue and dissolved (Mooney & Milkos, 1999). Applied to sport, disabled athletes who now rely on mechanical prosthetics may find such procedures helpful in creating new cyborgified limbs.

Hidden inside of cyborg corporealities, there is evidence that cyborg bodies have become both *bionic* and *communal/interchangeable* (Williams, 1997). As noted by Gray, et al (1995), cyborgs often rely on bionics to perform various functions, and sometimes to survive (e.g. pacemakers). Williams (1997) also names heart valves, titanium hips, polymer blood vessels, and electronic ear and eye implants as

characteristics of the bionic body One result of advanced medical procedures which relates to bionics is the ability to "mix and match" body parts through mechanical means, as well as through organ transplantation Williams (1997) points out that while the number of bionic parts is still rather limited, the growing industry of "cadaver salvage" has led to a reconceptualization of the deceased as "donor cyborgs" whose uninjured parts are quickly reconditioned for a new host (p 1043)

These two types of bodies also reveal further ethical issues involved in the literal translation of Haraway's notion of partial cyborg identities The implication for bionic technologies in sport are fairly obvious, and the idea of interchangeable cyborg parts certainly raises questions of athletic identity What are we to make of an athlete who sets a world record with a mechanical heart valve and a transplanted kidney? These are questions that must be further examined as cyborg athletes, who in many ways are a predictable outcome of the larger technoculture, attempt to displace the privileged position of the "natural" body in sport

The concept of *genetically engineered* bodies has only recently been given substantive attention among sport researchers, an interesting fact considering the already advanced work on genetically engineered muscle tissue cited above (Zorpette, 1999) Within the medical research community, the practice of gene therapy has been cited the next "great leap" in the history of modern (or postmodern) healing technologies (Anderson, 1995), but the growing controversies over genetic engineering revolve less around health issues than ethical issues, particularly in sport In the early years of this century scientists working on the Human Genome Project will complete the deciphering

and mapping of nearly all active human genes (Williams, 1997) Among other things, this means that if scientists discover a gene that contributes to performance, elite athletes may be among the first to take this "great leap" (Hoberman, 1992)

While still in an undeveloped stage, the science of *virtual* bodies also relates to what I have termed *self* cyborg technologies, although I am reluctant to label them exclusively as such While they alter our perception of the athletic body and, from a postmodern perspective, challenge the notion of the "real" body, technologies which use three-dimensional imagery to create a "virtual patient" seem different from the more intrusive types of self technologies available to cyborg athletes That said, these kinds of technologies, when applied to sport, represent immense challenges to modernist notions like the "athletic arena," particularly if a cyborg body is able to exert physical effort in a virtual world I will address these corporeal-ontological issues briefly later

The second type of sport technologies are **landscape** technologies, which refer to those technologies that form the sporting environments in which athletes compete Within the category of landscape technologies I count the new, multi-purpose sport complexes, complete with their jumbotron screens, retractable domes, mondo tracks, and artificial grass It also includes the entire media communications network that allows fans worldwide to watch events live, and perhaps even obtain additional information online As Bale (1997) argues, modern athletes compete in an unquestionably technological landscape, and in many cases are intimately tied with their surroundings

For instance, track and field athletes may now employ new tactics because of the ease with which distance runners, for instance, are able to monitor their competitors

However, after Algerian 1500 meter runner Hicham El Guerrouj set the world record last summer, he stated in a post-race interview that as he monitored his competitors on the jumbotron (showing his race in progress), he became distracted during his final lap and subsequently failed to finish as well as he might have. This illustrates an important point that should not be overlooked. While I would argue that all athletes are, to some degree, cyborgified, that is not to say that athletes' experiences are always pleasurable or benevolent in nature, and any research examining cyborg athletes should remain conscious of the fact that the cyborgification process, like most technological endeavors, is not immune to occasional glitches.

Implement technologies include those instruments and pieces of equipment that athletes use during their event, and that are generally constituent parts of the contests in which they appear. Within implement technologies, I am including things that are kicked, hurled, or otherwise propelled, as well as things like football and hockey padding, athletic cups, and lightweight running shoes, golf clubs, and tennis racquets. Aside from performance-enhancing drugs, much of the debate surrounding technological innovations in sport has focused on implement technologies, from football helmets (Gelberg, 1995) to fishing equipment (Hummel & Foster, 1986). Also, within the category of implement technologies, I include devices that allow for more precise timing and measurement, such as starting blocks that record a sprinter's reaction time.

With respect to the cyborgification process, many implement technologies demonstrate how an athlete's particular way of being technologized is often transient. When a football player removes his layers of padding and his helmet equipped with a

two-way microphone, he remains a cyborg in that he has been shaped by scientific training techniques and various substances, legal or otherwise, yet one could argue that he is no longer the cyborg he was moments ago. In considering sporting cyborgs, it is therefore necessary to examine not just how athletes interface with technology, but the occasions when they *disengage* with it as well.

Rehabilitative technologies are employed by injured athletes and by those who seek to counter the otherwise debilitating effects of their training regimens. Typically, these technologies are located in sports clinics and training facilities, and administered by specialists in athletic training and/or sports medicine. On the simplest level, rehabilitative technologies include whirlpool machines and ultrasound equipment that athletes use to heat and massage sore muscles and joints. More recent developments such as electronic stimulation, or "stim," machines send currents into the affected area to stimulate blood flow and aid in the healing process. While not technological in the usual sense, techniques such as acupuncture and chiropractic adjustments are also used in addition to mechanical and computerized treatments. It must also be noted that, while I use the term "rehabilitative" to describe these technologies, some might argue that, to the extent that they allow athletes to compete at a level that they otherwise could not, such technologies may be considered as performance-enhancing as well.

By **movement** technologies, I am referring to those devices and procedures that are designed to assess the form and efficiency of an athlete's body. The most common of such technologies is the use of videotape analysis, although there are much more sophisticated instruments that provide detailed computerized information on athlete's

biomechanics. At the Olympic Training Center in Colorado, for example, swimmers' strokes are evaluated as they swim in an enclosed tank in an effort to identify points in the movement where excess drag is produced. In general, then, unlike the other types of technology I have outlined, movement technologies are often not visible within the competitive arenas. Rather, they are housed in scientific laboratories or present only in practice situations. Finally, besides helping to improve an athlete's existing technique, the data yielded by movement technologies may also facilitate conceptual or stylistic shifts that allow the athlete to compete in a mechanically, aesthetically, and kinesthetically novel manner. For example, while a quad jump in figure skating is not technological in itself, it is certainly arguable that technology is implicated in the final maneuver.

While most cyborg technologies discussed so far have involved the integration of the sporting body with some kind of technology, cyborg sport also raises the possibility of a technological *abandonment* of the body, and a retreat from corporeality altogether. From this perspective, the athletic body, however technologized, might someday be viewed as "obsolete, deficient, (and) perishable" (Macauley & Gordo-Lopez, 1995, p. 435), as cyborg athletes employing virtual reality technologies to create new cyber sporting worlds disperse their physical selves, perhaps literally, into the web.

However, others have argued that future developments in information and communication technologies (ICTs) will facilitate the creation of novel forms of personal expression and experience that have the power to release human beings from the "material constraints" of their lives (Schreoder, 1994, p. 524). What this means for sport

is that while paralyzed individuals await new technologies which enable locomotion without cumbersome devices, they can also experience themselves however they wish within cyberspace-not just as people who can walk, but a new breed of athletes who can compete in virtual events through a kind of cyber-corporeality Schroeder (1994) is correct in cautioning against viewing these innovations as some sort of cybernetic panacea, and raises important questions related to autonomy and agency in cyberspace After all, how much influence does one really have in the construction, regulation, and safety of these interfaces? Further, to the extent that VR (virtual reality) systems which currently stimulate human sensory and perceptual mechanisms are moving towards an ability to reproduce these mechanisms, one might argue that such technologies threaten to envelop or replace, and not just augment or provide an alternative to, "natural" human perception

Finally, Hemphill (1995) has examined the possibilities of these forms of cyborg existences as they apply to sport spectators, and I would argue that virtual technologies blur yet another boundary of contemporary sport In a virtual sporting environment where the body is less relevant than the interface and program, it seems reasonable to suggest that the lines between cyborg athletes and spectators would also be polluted to an extent

The Power of Narratives

An increasing number of qualitative researchers have acknowledged the power of narrative research as a mode of inquiry especially suited to describing the storied lives of human agents (Hatch & Wisniewski, 1995; Josselson & Lieblich, 1995, Nelson, 1997,

Oliver, 1998, Polkinghorne, 1995, 1997) While this surge of interest in narrative work has not been quite as strong within sport studies, several authors have advocated the exploration of athletes' stories using various forms of narratives (Duncan, 1999, Foley, 1992, McDonald & Birrell, 1999, Sparkes, 1999, 2000, Tsang, 2000) Perhaps most encouraging is the dedication of the most recent volume of the *Sociology of Sport Journal* (SSJ) to the theme of "Sociological Imaginings, Sociological Narratives" As the editors of this special edition of SSJ, Jim Denison and Robert Rinehart (2000), assert, the works contained therein represent various methods and forms of narrative work that might be used by sport scholars seeking "more evocative ways of writing that standard practices" (p. 1) I was surprised, however, by the overall lack of attention to methodological issues that characterized many of the articles Specifically, while the first two articles provide fine introductions to the potential for narrative inquiry in sport and offer several criteria for the evaluation of narratives (Richardson, 2000, Sparkes, 2000), there was little discussion of how narrative texts should be constructed through the incorporation of interviews and other data sources It is for this reason that I have attempted to give a thorough account in the following chapter of how the narratives contained in this study were (co)created

While some narratives involve the telling of autobiographical stories (Sparkes, 2000), narrative researchers often listen to others' stories, collect and describe them, and sometimes connect them to external theoretical models (Oliver, 1998, Polkinghorne, 1995, 1997) While the terms "story" and "narrative" have been used interchangeably, some have suggested that the two may be distinguished from one another for the sake of

clarity (Connelly & Clandinin, 1990, Oliver, 1998) To this end, I will use “story” in reference to the reasonably coherent account of one’s life as told by the participant, and “narrative” to describe the research process by which participants’ stories are gathered, interpreted and re-presented to the reader, as well as the text itself

A unique method of exploring and describing individuals’ lives is the use of life history narratives Life history narratives fall under the more general category of narrative work, which itself is one of many modes of qualitative inquiry Thus, while all life history research shares the characteristics of most narrative work, not all narratives deal with participants’ life histories (Hatch & Wisniewski, 1995) For example, narratives can either focus on participants’ stories of a specific life event (e g puberty), or take as their subject the entire scope of participants’ lives, perhaps focusing on a specific phenomenon

Life history narratives are not simply isolated accounts of participants’ stories Rather, they describe the connection between participants’ lives and larger social events and contexts (Hatch & Wisniewski, 1995) Munro (quoted in Hatch & Wisniewski, 1995) concurs, and adds “This focus on the individual is to gain a deeper understanding of the complex relationships between ideology and culture, self and society Life history requires a historical, cultural, political, and social situatedness in order to avoid the romanticization of the individual, and thus the production of a hero narrative which reifies humanist notions of the individual as autonomous and unitary” (p 117)

One way of helping to contextualize participants’ stories is through the use of theory As Hatch and Wisniewski (1995) note, the use of theoretical frameworks to illuminate

participants' stories "provides a way to represent commonality and uniqueness" (p 128)

In summary, individual narratives stand on their own as textual portraits of one person's life, and yet for a sufficient narrative analysis these must be connected, sometimes through the application of theory, with other members of society, and situated within a particular socio-cultural and political context

Often, narratives are also directed towards social and cultural criticism. This type of work has ties with critical theory, and accepts the notion that one's social reality is mediated by socially and historically constructed power relations, that hegemonic domination remains the primary means of oppression, that these oppressions are often interconnected, and that "facts" are never value neutral, but rather laden with various ideological positions (Kincheloe & McLaren, 1994, p 139-140). Kincheloe (1997) also argues that critical self-reflection and an interpretive analysis of participants' testimony that acknowledges the influence of power dynamics in the shaping of participants' experiences allows this form of narrative work to actively weigh in on the side of justice.

These concepts have been applied within sport research by Foley (1992), who employed critical narratives in his examination of high school football. The challenge of representing narratives from one's own culture, Foley states, lies in "presenting familiar scenes in a way that challenges the reader's taken-for-granted understandings" (p 37). Further, if one seeks to conduct narrative research critically, which in the case of this study means from a perspective which challenges the often oppressive forces at work within the hierarchy of Olympic-level track and field, then it is necessary to prompt the

reader of the text to engage with his or her own memories and experiences as well (Foley, 1992)

Narratives are also intimately connected to debates over vexing moral questions As Murray (1997) states, "Much, if not all, moral discourse, including moral theory, is embedded within, conditioned by, and conducted in narratives" (p 10) Further, the stories people tell about themselves have their own inertia once they enter into the public sphere (Nelson, 1997), particularly when *counternarratives* are employed As Nelson (1997) describes, counternarratives are "stories of resistance and insubordination told or enacted by the oppressed or on their behalf" (p xi), and it is through these stories that individuals or groups are able to reclaim whatever agency they may have lost because of the forced muting of their voices by the dominant narrative

In his discussion of agency and the use of narratives in bioethics, Murray (1997) notes that in contemporary U S medical communities the master narrative is drafted by the white-coated physician, backed by entries on medical charts that are impenetrable to anyone but them The physicians, and the high-tech business of healing, tell stories of sickness and wellness against which other stories are deemed valid or worthless Brody (1997) also questions the privileged role of physicians in the network of health care provision, and suggests that narrative bioethics has the power to facilitate patients' reclamation of their individual and collective voices This scenario, though perhaps more compelling, does have some parallels to Olympic-level track and field and the decision-making process involved in the legalization or restriction of various sport technologies The U S track and field athlete shares with the hospitalized patient an experience of

being left out of the loop, and of having their bodies policed and regulated by track and field's three-pronged version of the physicians and the HMOs The IOC, I A A F , and USATF The U S drug czar's recent entrance into the debates over performance-enhancing drugs can be taken as further evidence of how a reliance on "experts" and state officials threatens to undermine athletes' abilities to tell their own stories in an open forum

This must not be taken to mean that athletes themselves have been unwitting victims, however, for as Cole (1993) admits, perhaps the most disturbing characteristic of "the era of the body under siege" has been the public consent to invasive practices (p 89) While Cole (1993) describes this consent as a characteristic of a larger techno-scientific hegemony, I would argue that such a position comes dangerously close to claiming that individuals have little or no agency with respect to these practices On one hand, the technological life history narratives of track and field athletes presented in this study may also act as counternarratives by creating counter-hegemonic spaces of resistance within which elite athletes are able to tell their stories of technology, their particular ways of being sportive cyborgs, and begin to weigh in on debates and policy decisions related to various types of technology It is also possible, however, that some athletes will consider seemingly draconian practices regarding the use and restriction of various technologies to be defensible on the grounds that they help preserve a level playing field (or at least the perception of one) and/or a pastoral sense of "old-fashioned" track and field competition.

Of particular relevance to narratives as a qualitative research method is the notion that life history narrative work should include a close relationship between the researcher and

participant, who must commune in some way to obtain a shared understanding of the participant's story (Atkinson, 1998, Hatch & Wisniewski, 1995). This relationship is closely tied to the issue of voice, and a number of questions related to the ownership and authorship of the final narrative text, as well as the benefits of the research to both researcher and participant (Hatch & Wisniewski, 1995, Lincoln, 1997). While there is no real consensus on how researchers should attempt to account for their contributions within the final text, it is widely accepted that narrative researchers must carefully consider, acknowledge, and monitor their participation in the construction of participants' life histories (Hatch & Wisniewski, 1995, Lincoln, 1997, Polkinghorne, 1997). However, there are dissenters from even this position. Sparkes (1995), for example, proposes a move from structural narratives to the creation of impressionistic, dramatic, fictional, or poetic representations of participants' lives. Regardless, it is important to remember that life history narratives are always joint productions of the researcher and participant, and that from the moment the researcher becomes a character in the narrative text the participant's story is altered (Clandinin & Connelly, 1994). Poststructuralists have also argued that narrative identities are always fluid, incomplete, fractured, and context dependent (Hatch & Wisniewski, 1995), which means that any temptation to regard the final narrative text as the participant's "true life history" should be resisted in favor of the view that it is one, hopefully plausible, representation of a life story.

Part III: METHODOLOGY

Introduction

This chapter details the methods used in the present study of the technological life history narratives of elite track and field athletes. I begin with a description of the research participants, and provide a rationale for their inclusion in the study. I then outline the data collection procedures, including the format and logistics of the life history interview and observation sessions, and explain other sources of data that were used to construct the narrative texts, including interviews with two college coaches and participants' personal photographs. Next, I describe the process of narrative configuration that was used to analyze the data and which helped guide the creation of each participant's life history narrative. Finally, I address the question of voice and representation by explaining how I situated myself within the narrative structure, and conclude by providing several criteria that may be used to evaluate the academic worth of the narratives presented in this study. Through engaging in the methods and procedures described above, I hoped that the resulting life history narratives achieve my aim of providing seven individual portraits that illustrate how these particular elite track and field athletes have engaged with technology throughout their lives, and how these experiences relate to their perceptions of and interfaces with technology in their athletic lives.

Participants

Seven elite NCAA Division I collegiate and post-collegiate track and field athletes were interviewed for this study, where "elite" was defined as an athlete who has either competed at the international level, or has demonstrated the potential to do so by

achieving All-American (top 8 at NCAA Championships meet) status in his or her given event. I attempted to include a roughly equal number of male and female participants, although the small number of elite female athletes I had access to made this a difficult task. I also attempted to include participants from diverse racial groups and class backgrounds. Class issues seemed especially important because one's socio-economic status dictates, to some extent, the kinds of technologies one has access to growing up. As Gray, Mentor, and Figueroa-Sarriera (1995) argue, while infinite vectors of transformation exist in a cyborg society, their particular subjectivities remain tied to issues of social difference, including our subject positions as raced, classed, gendered, sexually-oriented, and abled/disabled individuals. The cyborgification process does not replace these aspects of the socio-political self, but extends them in novel directions while blurring the distinctions among the various categorical labels (Gray, Mentor, & Figueroa-Sarriera, 1995, Haraway, 1985, Hayles, 1999). Shogan (1999) adds that even though elite athletes are all subject to the policing of their bodies and actions by various governing bodies, the ways that they experience and live their lives under such conditions will be contingent, in part, on similar aspects of the self. In short, all encounters with technology, even similar technologies, are *not* necessarily created equal.

Participants were recruited from a variety of track and field events, so that along with seven individual portraits of cyborg athletes, the results of this study may also shed new light on the technologization of the larger community of Olympic-caliber track and field athletes. This is not to suggest that these seven voices are representative of *all* track and field athletes, of course. Rather, these athletes' narratives should be viewed as distinct

examples of how athletes in elite track and field might cyborgify themselves, resist certain engagements with technology, and how their relationship with and awareness of technology relates to identity

The rationale for selecting track and field athletes was fourfold. First, these athletes collectively employed each of the types of sport technologies I have outlined, and thus their stories drew from experiences with a range of technological innovations. Second, the sport of track and field is generally considered to be the marquee attraction of the Olympic games, and its status as such has meant that debates over sport technologies have often been played out using track and field athletes. Third, perhaps nowhere is the tie between technology and the performance ethos of elite sport more clearly evident than in the arena of track and field, where the quantification of athletic performance takes the form of world record times, heights, and distances measurable to the most minute increments. Track and field provides a clear illustration of what Franklin (1996) calls the paradox of elite sport. The purpose of world class track and field competitions is not simply to win, but to exceed the limits of what was once thought impossible by personifying the Olympic motto *citius, altius, fortius*. Yet, while athletes at this level are driven to extend their physical and mental capabilities to reach incredible standards, they are simultaneously threatened with banishment if they partake in certain technologies, self technologies in particular, that would help them do so. Finally, aside from my general interest in the sport, my experiences as an NCAA Division I intercollegiate distance runner afforded me access to high-level athletes who may not have otherwise taken the time to participate, especially during the height of the outdoor

season in an Olympic year. In fact, even those who were initially cooperative proved less willing to meet for a third or fourth interview session. I also had an instant rapport with the athletes, two of whom I had been teammates with in college, and they seemed willing to disclose details of their lives that were, at times, surprisingly intimate.

Interview Strategy and Procedures

In-depth, semi-structured interviews (McCracken, 1988) were conducted with each participant, and follow-up conversations were conducted via telephone and electronic mail following transcript review. The interviews ranged from just over two hours to three hours and fifteen minutes, depending in part on how many technologies the participant engaged with in his or her event (e.g., a decathlete uses more implements than a high jumper), and the detail of his or her testimony. Due to the length of each interview and participants' highly regimented schedules, it was necessary to conduct the interviews over two or three shorter sessions. Atkinson (1998) suggests that extending the interview over a series of sessions yields a more comprehensive and detailed account of the participant's life because it allows both the researcher and participant to elaborate on points from previous sessions. I also found that reviewing the tape before subsequent sessions allowed me to ask more coherent questions that flowed more smoothly from the previous session. All interviews were conducted in a quiet, comfortable location within the department, and I was responsible for the audiotaping and transcription of the interviews.

Prior to the first interview, I participated in a bracketing interview conducted with the assistance of a fellow doctoral student experienced in qualitative research. The

bracketing interview served several purposes. First, it provided an opportunity to assess the quality of the interview guide in terms of the clarity of the questions, the logical flow between questions, and their ability to address the primary research aims of the study. Second, the bracketing interview allowed me to articulate my own life encounters with technology, as well as to describe my cyborg existence as a former intercollegiate distance runner. The bracketing interview also provided a way for me to make explicit my “epistemological and political baggage” (Kincheloe & McLaren, 1994, p. 140), a process that was especially important considering that the final narrative texts would be co-productions of myself and the participants. As a further means of situating myself-as-researcher within the contexts of my own engagements with technology and membership in American technocultural arena, I have included a brief autobiographical, technological narrative in the preface of this study.

Interviews followed a semi-structured, “life history” format (Atkinson, 1998, Frankenburg, 1993, Veri, 1998), in which the participant and I jointly delved into his or her experiences with technology from childhood through the present. The semi-structured nature of the interview permitted a more natural and uninterrupted flow between myself and the participants (McCracken, 1988), and allowed participants to freely explore any aspects of technology in their lives they found relevant. The first section of the interview guide consisted of several open-ended questions related to participants’ earliest memories of technology, their experiences with technology throughout their lives, and other items related to technology in general. These broad

areas of investigation helped situate participants within the larger technoculture, and served as a primer for the specific topic of sport technologies

Participants were also free to explore areas of their technological pasts that seemed tangential to the central research question, for as Frankenburg (1993) discovered in her research on white racial identity, comments which seemed irrelevant at first often revealed important information about participants' experiences after further analysis. For example, an athlete's testimony about technologies he or she did *not* have access to, or things that were not acknowledged or recognized as technologies, often provided interesting insight into his or her current views of technology in track and field. Finally, the term "technology" was defined largely by the participants, so they were not limited in their responses solely to what I would define as technology.

The second section of the interview focused specifically on participants' encounters with technology in the context of track and field. Participants were asked to describe their particular event, the types of technologies they employ, their experiences using these technologies, and how they view the influence of these technologies on track and field. To aid in this process, I also asked participants to reminisce about specific competitions that stood out for them. A secondary aim of this part of the interview was to examine participants' sense of embodiment in relation to their event and technology. These data provided insight into participants' experiences of sport technology in terms of Ihde's (1983, 1990) model of technological phenomenology. When, for example, did athletes feel part of, as opposed to separate from, the technologies they employed?

Following interview transcription, I provided a copy of the transcript to each participant for review, and for any additional comments they may have not, for whatever reason, included in their previous testimony. As Atkinson (1998) notes, "The transcript of the interview could be used as a first draft by someone who wanted to go back over it and subtract, add, or revise anything" (p. 24). Further, if there were any specific questions or points that I felt would add to the richness of the final narrative, I indicated these by placing bold-faced text in parentheses in the appropriate section of the interview text. This also allowed me to gain more information that would have otherwise been available because I was hesitant to request a fourth or fifth interview session several weeks prior to the NCAA and Olympic Trials meets. While some participants provided only a minimal amount of feedback, others wrote several additional pages of substantive comments.

To add to the detail of the interviews, I obtained additional data from other sources. Atkinson (1998) has suggested that photographs and other mementos are excellent tools for helping people recall the stories and events of their lives they may have forgotten, or fail to remember during the interview. For this reason, I asked participants to bring in any interesting photos they had of their childhoods or athletic competitions, although some athletes did not have these materials at their disposal. In the case of one participant, a hurricane had actually destroyed all family possessions of this type. While not all of the photos provided additional insight into participants' stories, they were all helpful in eliciting further commentary about specific episodes in their lives.

Observation Procedures

Additional data were gathered through observing participants during practice and at a competition. The purpose of the observation phase of this study was to watch the participants as they engaged with technology in the context of their events, and to take notes on the various sport technologies which were present at the site, as well those that were conspicuously absent. While the interview texts contributed much of the structure and substance to participants' stories, observing the athletes provided a wealth of contextual information, and in some cases revealed subtle details of their interactions with technology.

I attempted to observe each participant during at least one practice and competition, with the duration of each observation ranging from several minutes to several hours, depending on the nature of the event (i.e. a 200-meter dash or a two-day decathlon). While it was not possible to observe two of the participants during live competitions, I was able to acquire videotapes of previous competitions from either the participants or their coaches. During each session, I was usually seated in the bleachers overlooking the track, although I did venture down onto the infield area to get a better view of the field event competitions and participants' actions between vaults and throws. I recorded my initial fieldnotes in a notebook, and at times elaborated on these later in the analysis on the transcripts themselves. The competition sessions were necessary because some types of technologies (e.g. scoreboard clock) were only present during actual meets. Further, competitions presented an excellent opportunity to record how sport technologies present themselves in a social context and mediate interactions between individual athletes. For

example, were some technologies shared with fellow competitors and others restricted for private use? Did athletes switch technologies during or between events? How did athletes treat their equipment? Were there times when athlete' testimony differed from their actions? The answers to such questions provided another layer of richness to the narrative texts

In addition to the interview, photograph, and observation data, I interviewed one NCAA Division I coach via telephone and e-mail regarding his general thoughts about technology in elite track and field, and his impressions of the athletes in the study with whom he had interacted. The coach specializes in distance events, and is recognized as one of the premier middle-distance coaches in the U S. The interview also allowed me to obtain more insight into some of the stories participants told during their interviews. For example, I was curious about the coach's perceptions of why a participant had briefly retired from competition several years ago, and upon his return to the sport no longer desired this particular coach's services.

Finally, I had intended to conduct a group interview following preliminary data analysis to allow participants to share their experiences of talking about their technological life histories, and to offer their thoughts on policy decisions related to sport technologies. I had also hoped that this group session would allow participants the opportunity to notice any similarities between others' techno-narratives and their own, which may have provided additional insight into the meaning of their own story (Atkinson, 1998, Polkinghorne, 1995, 1997). Because of scheduling difficulties, however, it was impossible to gather even half of the participants together. Further, most

participants expressed reluctance over the prospect of talking openly about some of the more sensitive topics that emerged in the interview sessions, most notably issues related to banned substances

Analysis and Representation of the Narratives

Following interview transcription, I read the texts several times for familiarity (Sanjek, 1990) and took notes pertaining to the stories participants told about their lives, as well as any general comments they made related to technology. During the process of *narrative configuration* (discussed below), I began each narrative with an empty computer file, and from my annotated transcripts began to place sections with similar themes together, adding more notes and references to theoretical concepts each time. When I had several pages of unedited text in the “narrative file,” I printed out a hard copy and made further notes and revisions, and then read through the original transcript again for further insight and information that might be added to the final narrative. This process of revising and editing was repeated approximately five to eight times for each participant, until the final version was printed and sent to the participant for review and feedback. Finally, and rather unfortunately, only four of the seven participants responded with additional feedback on their narratives, and none of their comments warranted inclusion into the final texts. I will address this last point further in Part V. (Note: The section on narrative configuration will outline further aspects of data analysis.)

I also maintained a reflexive journal throughout the course of the study in which I catalogued my thoughts, questions, and decisions regarding data analysis and the research process in general. However, while I began with an actual notebook, my journal

eventually became the copies of the transcripts I accumulated for each athlete. As Hammersley and Atkinson (1995) note, what separates critical qualitative work from positivistic or naturalistic approaches is the notion of reflexivity, or the process by which the researcher recognizes, and at times exploits, his or her socio-historical location within the sphere of inquiry. The constant process of reflexivity during data analysis was thus crucial to the results of this study because it served as a constant reminder that my subjective experiences and voice are constitutive components of the research process (Denzin, 1992, Gray, 1997). Further, because some participants in the study told stories about similar technologies, reflexivity was helpful in preventing me from unintentionally assuming that what a given technology meant for one athlete was the same for another. Several times throughout the analysis process, preliminary results and narrative structures were also presented to colleagues with experience in qualitative research, narratives, and cultural studies for additional feedback.

Paradigmatic vs Narrative Analysis

According to Polkinghorne (1995, 1997), narrative inquiry may employ either a *paradigmatic* or *narrative* analysis of the data. The aim of narrative research which employs a paradigmatic analysis is to identify and describe common themes that emerge from individual stories, and to examine the relationships among these themes (Polkinghorne, 1995, 1997; Sparkes, 1999). This form of analysis often yields some sort of conceptual framework which purports to represent the whole of participants' experiences. This is certainly true in cases where the data are analyzed inductively, using something resembling Glaser and Strauss's (1967) grounded theory approach, although

the stories may also be subjected to deductive analysis, and interpreted exclusively through the lens of an existing theory (Polkinghorne, 1995, 1997) With respect to life history narrative work, however, paradigmatic analyses carry with them the danger that the idiosyncratic meanings of individuals' stories will be glossed over in an effort to present generalized themes (Oliver, 1998, Sparkes, 1999)

Because the main purpose of this study was to obtain several individual portraits of participants' technological life histories, a narrative analysis of the data was used to construct the final texts Rather than attempting to capture participants' experiences in a single conceptual framework or represent their lifelong engagements with technology with a Venn diagram, narrative analysis frames participants' life events and actions as elements that contribute to the advancement of an overall plot or plots The temporal aspect of plot advancement means that the resulting text is retrospective in nature, linking events and outcomes in a coherent manner The inclusivity of narrative analysis also "allows for the incorporation of the notion of human purpose and choice as well as chance happenings, dispositions, and environmental presses" (Polkinghorne, 1995, p 16) The technological life history narratives of participants in this study therefore portray the individual storylines from which their present ways and degrees of cyborg sport existence emerged

As Oliver (1998) points out, individual stories may exhibit striking similarities, varying degrees of overlap, or may even clash with one another Studies using a narrative analysis have, therefore, often include a series of lengthy narrative profiles that not only stand up individually, but that may offer a more thorough understanding of the

phenomenon than would a general framework based on the condensing of disparate voices (Polkinghorne, 1996, Seidman, 1985) I employed a similar strategy in this study, and each participants' narrative was given its own separate chapter within the second part of the larger text. The length of each chapter depended on the amount and depth of the interview and observation data gathered for each participant. While some participants told numerous stories about technology and its place in their lives, others were less able to articulate such experiences. While other types of non-narrative qualitative research might involve a less comprehensive treatment of a greater number of interviews, to overly simplify or summarize participants' stories in narrative research would undermine the rationale for employing this methodology in the first place, because it would preclude the kind of rich, in-depth descriptions necessary to portray athletes' technological life histories. Again, it is important to remember that the purpose of this study was not to reduce the experiences of all participants into one coherent vision of cyborg existence in elite track and field, but to illuminate their idiosyncratic ways of becoming, being, and in some cases un-becoming, technologized athletes.

Narrative Configuration

Narrative configuration provides the gears that move narrative analyses. As Polkinghorne (1997) states, narrative configuration is "the process by which happenings are drawn together and integrated into a temporally organized whole, whose meaning emerges when an individual story is understood in terms of its story line or plot, and when the story line is understood as part of a progression of events contributing to a specific outcome" (p. 5). The narrative texts were constructed, or *configured*, through the

interpretation of all of the data sources, although I drew primarily from the extensive interview texts to form the basic structure of the narratives. While there was no road map or instruction manual with which to guide this process, one source of general direction was the integration of *setting*, *characters*, and the emerging story *plot* (Oliver, 1998, Polkinghorne, 1995, 1997) into each narrative.

The *setting* describes the backdrop against which participants' stories take shape, and is comprised of the interconnected components of physical environment, sociocultural atmosphere, and temporal location (Oliver, 1998). Within the physical environment are the artifacts that assist in telling participants' stories, and often contribute to the narratives' plot. In this study, for instance, the presence or absence of various types of technologies at home or school were important considerations in the narrative construction. Related to participants' physical surroundings were sociocultural issues such as the values and beliefs of the family and community, as well as how issues of social difference present themselves in participants' stories. Finally, the temporal location of the setting contextualizes participants' stories in the pervading socio-political thinking of the times, and in this study it was necessary to consider participants' experiences in light of their engagements with technology within the politically charged atmosphere of American track and field, as well as outside of their athletic lives.

The *characters* are the individuals who live the events of the narrative, as well as the supporting characters who, while not the focus of the narrative, affect the participants' experiences and thus are likely to enter into the participants' stories (Oliver, 1998). It was my task as the researcher to determine which relationships should be included in the

narrative, as well as how my own character-the narrative researcher-entered into the text. As Polkinghorne (1995) suggests, the researcher must also consider the “embodied nature” of the storytellers, a notion that has obvious implications for a study on athletes and technology.

The *plot* is “the narrative structure through which people understand and describe the relationships among the events and choices of their lives” (Polkinghorne, 1997, p. 13), and which situates participants’ experiences and actions temporally, thereby creating within the story a sense of continuity and flow (Polkinghorne, 1995, 1997). In this study, the plot involved things such as participants’ first memories of encounters with technology, their current employment of sport technologies, and the ways they might be drastically transformed (or transform themselves) by technology in the future. It is through this process of what Polkinghorne (1995, 1997) calls *emplotment* that all aspects of participants’ stories are “woven into a thematic whole” (Oliver, 1998). In this study, the plot was, in a sense, already established, because the central theme of each narrative involves participants’ engagement with technology. Yet, the way that technology manifests itself in each participant’s life and stories will, as I have already pointed out, be contingent on infinite differences in identity and life experiences.

In an effort to describe in more detail the characteristics and process of narrative configuration, Polkinghorne (1995) offers several other guidelines for developing narratives, and suggests they may also be used to help evaluate the academic worth of the final texts. Although many of his ideas are found scattered throughout the literature on life history narratives, I consider these guidelines to be a concise summary of useful ways

to tie the three components of narrative configuration together into a coherent representation of the participants' lives. While some of the following recommendations were more relevant for some participants' stories than for others, I considered each of them carefully and incorporated them whenever appropriate during the process of narrative configuration.

- 1 The narratives should include detailed descriptions of the cultural context of participants' stories because their values, social rules, and systems of meaning contributed to their actions and behaviors to at least some degree.

- 2 Issues of embodiment should be considered in the gathering and configuration of the data, because participants' lives and the stories they tell may change as their bodies and sense of corporeality develop over time.

- 3 When incorporating characters into the narrative, the researcher should make note of the relationships between the participant and the secondary characters, as well as any relevant interactions among secondary characters.

- 4 The researcher should focus on the choices and actions of the participant in an effort to better understand and describe his or her vision of the world, dreams and desires for the future, and motivations and interests for pursuing these endeavors.

- 5 During narrative configuration, the researcher should consider the historical continuity of the participant. In order to allow the reader to understand the protagonist's present perceptions, beliefs and actions, the relationship between present and past events should be presented, even if there are contradictions and/or inconsistencies between the two.

6 With respect to the narrative plot, the researcher should remember that the inclusion of rich, or thick, description is necessary to differentiate one story from another. This suggestion is especially relevant to the present study because of the similar "occupations" (i.e. track and field athletes) of all the participants.

7 Polkinghorne's (1995) final guideline for the construction and evaluation of narrative analysis relates to the plausibility of the final text. While the narrative process cannot be explained in any recipe-like manner, the end result can be judged by its ability to draw the multitude of participants' life events together into a portrait that transcends mere story and illuminates the meaning of an individual life in new ways.

Further Criteria for Evaluating Narrative Research

Numerous researchers have questioned the appropriateness of using traditional means of establishing quality and academic rigor in life history narrative work. Lincoln (1997) has taken an especially progressive stance on this issue, and argues that criteria like validity, reliability, generalizability, and objectivity have no place in narrative research. I agree wholeheartedly, but still believe that there must be some method(s) of distinguishing between rigorous qualitative scholarship and a random assortment of stories. In addition to Polkinghorne's (1997) guidelines outlined in the previous section, I attempted to establish the academic value of this research in other ways as well, and it is my hope that the reader considers these in his or her evaluation of the narrative texts. That said, none of these suggestions for evaluating the present research are objective in any way, and therefore any disagreements among various readers should be viewed as an

opportunity to engage in dialogue about narrative analysis, narrative configuration, and the content and presentation of the final texts

Several scholars have argued that validity should be discarded for the more appropriate and practical criterion of trustworthiness (Kincheloe & McLaren, 1994, Lincoln & Guba, 1985, Sparkes, 1998, 1999) One aspect of trustworthiness involves “member checking,” in which participants are invited to read their transcripts and the results of the study, and express their views on how their realities have been represented by the researcher Writing more specifically with life histories and narratives in mind, Atkinson (1998) uses the term “subjective corroboration” to describe the notion that the participant should be able to identify with his or her representation in the text, which means that the researcher should, when possible, attempt to use the participant’s vocabulary in the text According to Lincoln and Guba (1985), participants may or may not agree with the conclusions drawn by the researcher, but they should be able to “see” themselves in the results. Because I view the narrative texts as co-productions of a close relationship between myself and the participants, and because one of the purposes of this study was to help athletes attain a better understanding of their technologized lives, I took great care to include each athlete in the process of narrative configuration I did this, as I have mentioned, by returning both the interview transcripts and the final narratives to the participants for review and additional comments While I found that few participants agreed with every aspect of their portrayal in the narrative, they all understood how their life experiences could be interpreted as they were

Some have argued that the participant, as “original author” of their story, should have the power to determine what aspects of the final narrative remains intact and which should be substantially altered or removed (Atkinson, 1998). However, others have pointed out that, while the participant does have the privilege of telling the story, no such privilege exists with respect to the interpretation of the story (Geertz, 1988, Lincoln & Guba, 1985, Polkinghorne, 1995). A good summary of the latter idea was offered by Richardson (1990, quoted in Sparkes, 1995), who stated: “As qualitative researchers, we can more easily write as situated, positioned authors, giving up, if we choose, our authority over the people we study, but not the responsibility of authorship over our texts” (p. 168). I agree with Richardson (1990) here, for while the athletes may have been able to describe their experiences with technology and provide insight into how they view themselves in relation to sport technologies, they may not have had any more access to the meanings of these phenomena than I do. Acknowledging times that I may have recognized meaning in the participants’ stories that they did not, also helped me to resist the temptation to achieve an artificially harmonious agreement with the participants, something that would have undermined any sort of critical reading of their stories.

In addition to member checking, narrative research may also involve what Patti Lather (1991) calls catalytic validity. According to Lather (1991), critical research should be evaluated in terms of its ability to prompt the people it studies to better comprehend their own social conditions, how and by whom these conditions have been shaped, and how they may be altered. Gray (1997) also points to the intersection between cultural studies and feminist sociology, and the focus of scholars within these movements on conducting

research which is motivated by a “democratic impulse” and a desire to provide a venue for marginalized voices (p 92)

While the athletes in this study are not “marginalized” in the traditional sense, they are still subject to the disciplinary forces and technological hegemony operating within elite track and field (Shogan, 1999) Thus, while all seven participants in this study are, without question, quite privileged with respect to their present access to technology, they are currently not in a position to seriously challenge all of the ways in which they interact and engage with various technologies both within and outside of sport. In fact, many athletes were initially unable to even recognize many technologies they interfaced with every day, and most had no awareness of or interest in how decisions were made regarding which sorts of technologies were allowable and which were not.

Returning to Lather’s (1991) notion of catalytic validity, while it is impossible at this juncture to ascertain whether or not participants actually viewed their engagements with technology any differently because of their participation in this study, I consider their positive comments throughout the research process and their willingness to provide feedback, often extensive and detailed, on their narratives to be at least some indication of an increased awareness of how technology has affected their lives Further, I hope that the times when participants did not agree with my critical interpretation of their stories were not perceived by them as threats, insults, or academic nonsense, but as alternative, even challenging, views of their technological lives I certainly recognize the inherent tension that exists between my critical readings of participants’ stories and my desire to inspire them to take a greater interest in how they engage with technology It is my

contention, however, that the narratives represent rigorous and critical qualitative work that carries with it at least the possibility of enlightening and empowering the athletes in this study

Representation and the Question of Voice

In their review of the history of qualitative research in the 20th century, Denzin and Lincoln (1994) state that a “crisis of representation” arose in the mid-1980s that was characterized by an increased level of uncertainty as to the researcher’s ability to directly capture participants’ lived experiences. From this “fourth moment” in the evolution of qualitative research emerged questions related to how the researcher writes the social world and its inhabitants, and the degree to which he or she is explicitly visible within the text itself (Denzin & Lincoln, 1994). The supposed innocence and neutrality of qualitative studies was thus severely undermined, and as Sparkes (1995) states, “How we as researchers choose to write about others has profound implications, not just for how readable the text is but also for how the people the text portrays are ‘read’ and understood” (p. 159). In the ongoing “fifth moment,” the influence of postmodernism and poststructuralism has urged researchers to more rigorously address the question of representation. This challenge must be answered by narrative researchers through the thoughtful consideration of (1) how one’s own voice as a researcher is inserted into the text, (2) how the participant’s voice is represented in the text, and (3) the audience that the text is directed towards (Lincoln, 1997).

Although there has been an increased recognition of the notion of the “researcher-as-instrument” among qualitative researchers in sport studies, most authors have failed to

put this idea into practice by accounting for their voices within the final texts (Sparkes, 1998). For this reason, I conclude this chapter on the methods used in this study with a brief discussion related to how I negotiated issues related to voice in the narratives.

To clarify what I mean by *voice*, I am referring to the notion that the teller of the narrative shifts at different points throughout the text (Clandinin & Connelly, 1994). Predictably, the participants' voices and my own voice are most prominent in the following chapters, but it must also be understood that neither they nor I possess a singular voice. For example, as the author of the texts, the way my voice is represented varies depending on the context. At times my shared experience of having been a competitive intercollegiate track and field athlete will enter into the foreground, while at other times my voice will retreat into the periphery as the participant's voice emerges. There are also moments when I employ a more formal, "academic" voice, and while I agree that this voice should not automatically be given a privileged position in sport-related narrative texts (Tsang, 2000; Richardson, 2000; Sparkes, 1995, 1998, 2000), its presence is, nonetheless, quite appropriate for the audience (i.e., other scholars) that this study is directed at. At the same time, most participants stated that they found the texts reader-friendly enough, and were generally interested in seeing their stories as they were represented in the narratives.

I have attempted to account for my voice in several ways throughout the course of writing each of the narratives presented in the following section. First, I attempted to situate myself within the context of this study by briefly tracing my own technological life history, from my childhood, through my athletic life, and into my current academic

position (see preface) Second, I made no effort to produce in the process of narrative configuration what Geertz (1988) calls “author-evacuated” texts, where my presence is everywhere but explicit nowhere Rather, I openly inserted myself into the narratives at appropriate moments when I felt my voice added to, but not overshadowed, the participant’s story Further, as opposed to using acontextual quotes from participants without any reference to what they were responding to, I have also attempted to include numerous exchanges between the participants and myself to illustrate the dialogical nature of our relationship during the interview sessions

Part IV: PRESENTATION OF THE NARRATIVES

Introduction

In the following chapters I present the technological life history narratives of the seven participants in this study. They are in no particular order, and each is meant to stand on its own as a unique portrait of one world-class track and field athlete's engagement with technology. A brief statement is first necessary, however, on the style and form of the narratives presented in the next section. Even a cursory examination of the growing body of interdisciplinary narrative work reveals a wide range of methods for representing participants' stories. Given the focus of this project, I have logically drawn mainly from the work done by those in sport studies, although there is a great deal of variation even within this more limited arena. While some authors have elaborated on methodological issues related to narrative work (e.g. Richardson, 2000, Sparkes, 2000), others have been content to present fictionalized stories as narratives without reference to any sort of method (e.g. Bethanis, 2000, Denison, 2000).

Sparkes (1999) points to the work of Denison (1996) as a credible example of research that employs narrative analysis. From interviews with 12 retired world class athletes, Denison created three short stories that dealt with sports retirement. While I would argue that this method has the same drawback as paradigmatic analyses, in that some individuals' experiences may be lost in the amalgamation process, I find his attempt at more creative styles of writing to be vital to the creation of engaging texts. Thus, through the process of narrative configuration I have attempted to create texts that are engaging from both a critical and literary perspective. It was my intention that the narratives present unique portraits of participants' engagements and relationships with technology.

that speak to issues of agency, embodiment, power, and technological hegemony, as well as to the joy these athletes clearly expressed for their sport. Further, while I offer critical commentary throughout the narratives, I hope that I have not “closed down” (Sparkes, 1999) alternative interpretations by either other scholars or the athletes themselves

I. Miguel

Introduction

He is only 5’8” and paper thin, but Miguel could definitely be a comic book hero. As I watched an old videotape of him overtaking his competitors in the final meters one of his NCAA championship victories, I was struck by how much he reminded me of some misfit superhero. In his bright orange bodysuit and rectangular goggles, it would have seemed only natural if he had taken off flying after crossing the finish line. He did not, of course, but Miguel’s track résumé is as impressive as anyone’s, and in the two years we were teammates he did just about everything *but* fly.

His first love as a child in Latin America was soccer, but when he moved to the U.S. he found that the beauty and finesse of the game was supplanted by a more aggressive, physical playing style. For reasons that will hopefully become clear in the following pages, Miguel had a distaste for the rough-and-tumble American game, and after some prodding he found himself on the track team. He improved rapidly throughout high school, won the 800 meter state championship his senior year, and by the end of his freshman year in college had improved his best time an amazing 5 seconds more, placing him behind only the legendary Jim Ryan on the all-time U.S. Junior list. In the next three

years he added nine conference and four NCAA titles, making him one of the most decorated 800 meter runners in NCAA history. Finally, he competed in two Olympics and World Championships, and made the finals at the 1995 World's in Sweden. All of these accolades, however, are merely the frosting on his identity, and his story of cyborgification has its origins where his life began, and where his heart remains.

Background: A contrast in technocultures

To know Miguel and understand his life engagements with technology, we must first understand his love for his homeland. He was born and raised until high school on military bases in Puerto Rico and Panama, but calls Puerto Rico his true home. As a child, he remembers playing in the jungles, some of the densest on earth, and running around a dirt oval while waiting for the school bus. He looks back with fondness on his childhood, and still has an appreciation of the diverse and inclusive nature of life on the military bases, as well as what he describes as a simple, almost pastoral existence. As he stated in the first minute of our discussion, "It was pretty much just the basics. I didn't have a lot of things. I didn't know any better, and I actually enjoy that better. I'm a basics person when it comes to living."

His home life was simple as well, and he spent most of his free time outdoors, something that was made easier by the fact that he cared little for television (there were only three channels) and other indoor activities. This is, in fact, something that Miguel continues to take great pride in, and part of his identity is tied to his pride in Latin American culture and its emphasis on physical activity. Because life focused primarily on outdoor activities, Miguel's perception was that the kids who did take part in more

technological leisure activities were somehow culturally deficient. As he stated, "There was so many things to do activity-wise that if I didn't have a Collico-Vision or Atari, who cares? Those guys were usually the social misfits that would stay and play Zaxon and Blip. Those were like the social misfits." This attitude would intensify later on in his life, and it will become apparent that these general feelings towards technology generalize to some kinds of sport technologies.

In contrast to the distinctly primordial feel of his jungle (otherwise known as rainforests) adventures were the daily military exercises that introduced Miguel to imposing, not to mention deadly, sorts of technologies. He described how the entire local culture, despite its "third world" trappings, was infused with a U.S. military presence that literally buzzed with technology, and how every morning he awoke for school as convoys of tanks rolled past and squadrons of jets roared overhead. Technology also permeated the local airwaves. While he didn't watch television often, the one English channel was controlled by the military, and frequently played low-budget Pentagon-produced commercials that informed the island's residents of the newest satellite tracking systems and other unclassified weaponry.

Miguel's earliest exposure to computers was in elementary school. Because he was fluent in Spanish and English he was able to work as an unofficial tutor to other students, and he made use of a well-equipped motor skills and audiovisual lab to help students learn English with the help of computer images and multi-media presentations. Given his constant assertion of the primitive nature of his origins, this early interface with

technology is interesting, and in fact this story was followed immediately by a disclaimer of sorts that served as a reaffirmation of the simplicity of his socio-cultural environment

Technology wasn't a huge thing for me growing up We ran on a gravel track stuff like that It was really laid back I guess it's like the stereotype Jamaican guy with the big joint just kicking back that was pretty much it, besides the joint

His recognition of the importance of technology as an educational tool and subsequent denial of its impact reveals Miguel's mixed emotions when discussing the topic

Moreover, his hesitation when providing an autobiographical account that seems too closely tied to or reliant upon technology illustrates how important his characterization of his childhood as "simple" is to his identity

The origins of his athletic identity are also deeply entrenched in his romanticized conception of his low-tech surroundings growing up He competed informally in Panama, and describes the equipment and facilities as, not surprisingly, "Third World" and even "medieval "

All of our track equipment was just so Third World Our starting blocks was just a little shovel like they used in the [1936] Berlin Games You just went in and shoveled out a place for your feet We ran on a loose gravel track It wasn't even a finely packed gravel track, like you could slide on it! So, we ran on the junkiest conditions looking back, but that's all we knew We appreciated even having the chance to do high jump We just really loved it I made it sound bad, but it was actually awesome

His father was transferred to a base in the Eastern U S prior to Miguel beginning high school, and from the time they moved into their mostly white suburban neighborhood, he began experiencing the staggering differences between his native and adopted cultures While he sees "Spanish culture" as rich in history and significance, the same cannot be said for his view of American culture Despite his eventual concession that there are, in fact, many diverse cultures within the U S , his first reaction was that America is devoid

of any meaningful culture, and he summarized it quite stereotypically as "hot dogs, french fries, and apple pie "

His idealized view of Panama and Puerto Rico is still, even years later, in direct contrast to the almost resentful tone he uses when discussing his high school years, where what he saw as a sedentary lifestyle provided a backdrop for an elitist, self-centered population. He recognizes the benefits of technology but sees it as a primary contributor to the laziness and perceived sloth he saw as inextricably tied to American life, in general. In fact, he credits a society that allows people to drive everywhere (he walked or took the bus everywhere) and order groceries on-line as the prime reason why America is the "most obese nation in the world "

This sense of culture also relates to Miguel's bitterness towards class privilege, as is revealed by his assessment of his first experience of living in the U S

It was pretty much just the stereotypical place when you have a bunch of kids that have money and drive Beamers and Jeeps and wear Duckhead stereotypical frat and sorority people. They pretty much just get drunk and laid. I hate to stereotype, but that's all they really did.

He was not poor, however, and as his father progressed through the ranks his family moved into larger houses with much nicer property. Despite being well-off financially, and even having such childhood luxuries as the entire collection of Star Wars figures, he remains to this day strongly rooted in his class background and values. He lives with his family in the suburbs, but does not identify with the ethos of suburbia in the least.

Of cheetahs and BMW's: Hybrid corporeality and the running body

The most figural aspect of Miguel's life with respect to technology is his cyborgified, and thus inherently incomplete and fractured, view of his body. Taking a page directly

out of the Enlightenment's conceptualization of the human body, Miguel initially describes his body in motion in mechanical terms, but then adds a touch of humanistic aesthetics to his description

I'm a big mechanical nut I love the mechanics of the body and running I actually saw running as a really beautiful thing I see boxing, except heavyweight, as a beautiful thing I see a lot of sports as beautiful the stuff that humans do Stuff with implements golf to me is fine, but it's a nice thing, not a beautiful thing

I asked him to talk more about the mechanics of his body

Ted: Tell me a little more about your interest in the mechanics of the body?

Miguel: I could watch a horse race, and I just like to look at the striations of the muscles The way the head is The way the neck is moving I like to watch documentaries of cheetahs lions, antelopes running I like to look at the mechanics of how the body works The body to me is the most technologically advanced thing in the universe You can't replicate the movements of a hand with as much technology as we have You just can't replicate stuff like that

For Miguel, the machine cannot capture the beauty of his body, and science and technology are incapable of replicating human biomechanics, for the body is a unique, near perfect organism that can only be carefully manipulated and finely tuned like a bipedal automobile This fine tuning, in turn, can help improve human movement, and it was this fact that eventually led Miguel to pursue and obtain a degree in human motor behavior

I was interested in how Miguel conceptualized the efficiency of the running body and the aesthetic value he seemed to attach to it

Ted: You talked about the efficiency of the body and the beauty of movement?

Miguel: They're related When you do something right it's great You can relate it to a car, you know When you build a piece of crap car like a Yugo, you don't pay any mind I look at the BMW 5540, and no matter where I'm at or who I'm talking to, I stop and look at it and think, "What a beautiful piece of art " If the body is efficient and doing its function, it's a beautiful thing If the body is inefficient and doing a junky function, then it just looks like garbage

The runner without efficient technique, a stride that is erratic and choppy, is the equivalent of a cyborgified athletic lemon, and for Miguel to be regarded not as artistic but as “garbage.” While he relates efficiency to the beauty of his running, the aim of this perfectly functioning body is still ultimately to get to the finish line first. After all, no track athlete has ever finished fourth and been awarded a medal for his or her beautiful stride and mechanically sound form. The following exchange illustrates this point, and further reinforces the mechanical aspect of his corporeal experience.

Ted: Does efficiency relate to performance?

Miguel: Yeah. The more efficient you are the less energy your body is going to expend, so you’re going to have more at the end.

Ted: So, when *you* run well, do you feel that your body is functioning efficiently?

Miguel: Yeah. It’s just like a machine. I’m just firing on all cylinders. I’m efficient. I’m not using five instead of six cylinders-everything’s on. Mechanics to me is number one, because if I have bad mechanics, even if I was aerobically sound, I’m not going to be aerobically sound because I’m fighting my body. Mechanics is something I take pride on and work on more than just about everything else.

Miguel’s sense of embodiment and corporeal efficiency is worlds removed from the monstrous ordering effect of Ellul’s (1964) substantive notion of cold, technologized efficiency. From Miguel’s perspective, the beauty of human movement is heightened by technologies and scientific procedures that increase the efficiency of the movement, and in the process enhance its performance. Further, the seemingly instrumental emphasis on performance enhancement and measurable improvement also retains, for Miguel, a thread of Pronger’s (1998) sense of pleasurable cyborg experiences. He makes an important cyborgian paradigm shift when he voices his pleasure from being present to the beauty of efficiency without reference to whether the movement is being produced by humans, machines, or animals. It is a true blurring of the boundaries both perceptually and

experientially, for he is at once the human moving through space with the grace and efficiency of a bionic cheetah. To Miguel, the maximally efficient running form is simultaneously a technological and artistic masterpiece. It is hard to argue with him on this point, and as I watched an old tape of him anchoring a relay I felt as though I was witnessing eloquent prose embodied in the form of this man in an orange spandex bodysuit and rectangular goggles. The first lap was the grace of an opening stanza, with every step coming closer to some profound, final couplet.

It's gotta be the shoes: Technology, knowledge, and agency

During his freshman year in high school he began competing seriously in organized track, and trained in a pair of ten-dollar Jaguar tennis shoes until a friend gave him an old pair of Nikes that felt "softer than marshmallows." This was the first step towards an increased awareness that improvements in shoe technologies meant that his feet would be more comfortable, and that his performances would improve. More generally, he points out that, "That's when it really started to click, that running is the cheapest sport in the world, but if you have the top equipment you'll stay healthier and run faster." Soon after this mini-revelation, he saved up money earned mowing lawns and washing cars and bought his first pair of racing shoes, the Nike waffle racers. With their patented spikeless traction on the sole of the shoe, the Waffle Racers could be used both in track and cross-country, and Miguel attributes much of his early performance gains to those first pair of specialty shoes.

Along with his growing knowledge of shoe technology, his exposure to the latest facilities at bigger meets was almost overwhelming at times, leaving him feeling like "a

kid in a candy store ” As both Borgmann (1984) and Winner (1995) have argued, being born and raised in the midst of a techno-whirlwind makes it difficult to see things as technological, and in one sense the point of high-tech culture is to remove any extraneous thought or effort from the consumer As a result, many technologically saturated Americans, myself included, tend to take technological innovations for granted, and to view monumental events like the completed mapping of the Human Genome in an alarmingly casual manner

Miguel’s experience growing up in Latin America made this kind of techno-blindness impossible, of course Just months before he had been running on dirt with equipment that was decades old, and now he was witness to, and acutely aware of, an American sport technoculture shifting into overdrive Combined with this awareness was a growing excitement over track and field technologies that led him to question coaches and search the internet for information on why a particular track surface was better for his event, what materials and designs were best for his shoes, and what supplements were most beneficial for his body.

This quest for agency over what technologies were used in his sport eventually afforded him the opportunity to serve on several panels that dealt with shoe development, and to wear test new prototype shoes by his shoe sponsor at the time. He also told an interesting story of a memorable discussion with a Nike representative in which his feedback was particularly useful

We sat down in a hotel room in NY for 4 hours and talked about how a shoe needs to be, about the next generation of shoes We broke it down even to the lacing system Spike plate configurations, pressure points in your foot and all this stuff It made me feel good because about 6 months later about half the ideas we talked about were in

the shoes that Nike is still using now

Technology and the knowledge that went into things like new shoe materials were no longer out of reach as they had been growing up in Latin America. As a world-class athlete with a degree in human motor behavior, he positioned himself to become part of the decision-making process in his own small way, although he admits that he felt somewhat awkward about not being financially compensated for his input¹. Presently, Miguel continues to use his knowledge of mechanics and human physiology as the co-owner of a local fitness center, where he has the responsibility of helping to determine which equipment and supplements are purchased. In contrast to his affinity for the latest shoe technologies, however, he still prefers “old-school” iron free weights and barbells over the latest devices, even though the latter are designed to produce the most economical and biomechanically correct movements. It is a case of one ethos taking precedence over another, of technocultural identity over efficiency.

Tainted rings: Drugs, disillusionment, and the Olympic Games

By the barely mature age (in track years) of 26, Miguel had become the track equivalent of a successful actor on the Hollywood A-list, and at one point he was briefly ranked number one in the world. He was a proven performer who had progressed from an outstanding collegiate career to become one of the world's best in his event. In 1997, however, the beauty and efficiency of his stride were compromised by injury and the luster of the Olympics was gone. So, he hung up his spikes and without much fanfare he was gone as well. The starting lines simply made room for the next phenome. This was a major change in his life, a life that had included years of competitive training and

racing and a level of success that had provided him with a financially stable and comfortable life. His retirement story is tinged with conflict and bitterness, and yet there is little sign of regret.

At first, Miguel claimed that a reoccurring achilles heel problem and the birth of his first son were the main reasons for his retirement. However, his tone became increasingly flustered when he told of how the rampant use of performance-enhancing drugs, and the corrupt bureaucracy that he felt was complicit in the perpetuation of a barely concealed drug culture in track and field, led to his complete disillusionment with Olympic-level track. In Miguel's eyes, the upper echelons and podiums of his event, and the sport in general, had become populated largely by "steroid-mongers," so I asked him to talk more about his encounters with banned self technologies and elaborate on his own ethical views on the subject.

He recounted an episode that occurred at his first Olympics that permanently soiled his perceptions of his fellow competitors' credibility and the overall spirit of the Games:

I always knew about it [the use of banned substances]. I knew people were on it, but it never really hit me until I was at the practice track in Barcelona [1992]. I open up the door to the stall to take my pre-race bathroom break, and I look down there and see six or seven hypodermic needles, a couple of little vials, some little packages that would contain a pill in all these funky languages spread all over the bottom of the shitter down there. I was going, "You know what? I'm about to race these guys and they're on drugs and they're not getting tested positive."

While his estimation that only 10% of the gold medallists in track and field were clean cannot be substantiated, there is something to this tale of what amounts to a conspiracy theory. In a private conversation with Phil, another two-time Olympian who roomed with Miguel in Barcelona, he told a story of returning to his room one night to find

several vials of urine sitting on the bathroom counter. According to Phil, the specimens belonged to their third roommate who had won a medal in one of the sprint events, and who had entered the room after his victory with no visible joy or elation, something which stunned both Miguel and Phil. Of course, the reason for the vials' presence is only speculation, but such events seem to lend some credence to Miguel's story of seemingly inappropriate practices among his peers.

Perhaps more interesting is how each of these sketchy episodes relate to Miguel's idealistic desire to be part of an athletic community where corporate interests and the pressure to perform do not tempt athletes to partake in illegal practices. His use of "they" when discussing the IOC and what he considers its lenient drug-enforcement policies also indicates a sense of helplessness. He saw himself and other top athletes in the sport as pawns, and described what he continues to view as a "pimp and whore" relationship between agents and the athletes they represent. For those familiar with the culture of elite sport, this is arguably a cynical but fitting analogy, for just as drugs and exploitation are part of prostitution, so too they seem to have become a constituent part of elite track and field.

Because Miguel had repeatedly used the term "clean" to describe athletes who were not taking steroids, I asked him to elaborate on how he defined "clean" and "dirty" competitors. The following exchange helps to illustrate how he constructs these physical and ethical boundaries.

Ted: When you say clean, talk to me about where you draw the line between clean and not clean?

Miguel: I think the shadiest thing that I possibly could have taken is creatine. I think that if it's banned, then it's illegal. If it's not, it's not, because it's out there available.

to the general public. If they go ahead and legalize all the steroids, then nothing's banned and the person with the best chemist wins. More power to you. I just won't run because I don't want my balls ruined for the rest of my life—my balls, my liver, and my stomach. I just have no need for that. So, I'll just go ahead and step back from track and field forever and just say, "Hey that's it!" If it's banned, just don't take it. I just want to be able to look at my kids in the eyes and say, "I ran to the best of my ability."

Ted: And by "my" you mean ?

Miguel: My own God-given ability that he gave me chemical-free. I didn't even really drink Gatorade. I drank water in workouts. I think the only supplement that I consistently took was maybe GNC ultra-mega for men because it has good things and vitamins and minerals. That was about it. I took blue-green algae and anti-oxidants to help clean out my system. I took things that were not banned, you know, they were available to the general public and normal people. The blue-green algae isn't something that I found in some type of running journal. It's something that a lot of the hippies and treehuggers told me was good for my system—people who were mindful of their bodies.

The connection he makes between banned substances and legal standing are not always true, of course, because some substances, antihistamines for instance, are perfectly "legal" as long as you do not happen to be an athlete competing under the jurisdiction of the IOC or IAAF. This quote also shows Miguel's recognition of health issues associated with the use of many banned self-technologies, and his awareness that, in an openly cyborgified competition, the most successful athletes may well be the ones with "the best chemist." Also interesting is his reference to the "treehugger" friends that recommended that he take blue-green algae, yet another attempt to prove his identity as a "natural" athlete rather than an athlete so obsessed with self-technologies that he would buy them from a specialty running shop. Above all, he is clearly proud that he resisted the temptation to take drugs. As the following quote illustrates, even though he clearly knows the benefits that drugs would have brought, he also clearly believes that some things outweigh the win-at-all-costs ethos that he feels has tainted the sport.

If I would have taken drugs I'd be a millionaire, a world record holder, and I'd be set for life, but personally I wouldn't have been able to look at myself in the mirror I'm not poor I'm not rich, but I get up and look in the mirror every day When I look at my kids and I see them-how innocent and pure they are Rather than having a father that's a druggie I might as well be in the bathroom just tying up my arm shooting up heroin That's how against it I am

Miguel may view himself as a cross between a Porsche and a cheetah, but he still clings to a sacred notion of a "pure" self. He situates himself as a purist among the pimps and whores of the big business world of track and field. As he states, "I have different views I guess Rather than just looking at the money I look at the whole thing I'm rare in that aspect " He is, at least in his own mind, the noble anachronism who retreated from the corporate interests and drug culture of the Olympics rather than remain in a place where he would be embarrassed to take his children

Declining the Golden Egg: Technology and National Identity

A year ago, Miguel decided to end his early retirement and begin training again with the aim of qualifying for the 2000 Olympics and representing Puerto Rico. In fact, just days prior to our first interview he had received a fax from the I A A F. declaring him eligible to switch his eligibility from the U S to Puerto Rico His heartfelt decision had been years in the making, as the following quote illustrates

I always wanted to represent Puerto Rico That's what I was raised around That culture and pride I just felt that pride When I had a choice to set myself up in an economic position, as far as track being a job for me more than anything, I decided to run for the U S because of sponsors and money and stuff I was younger also. To me, I made a good choice, but I didn't make the right choice personally I made a good choice for my family, because now I have a house, three cars, a fence, I want to get a dog so I can be the typical whatever Economically I made the right choice but inside my heart I didn't That's why now that I'm coming back

Indeed, his heart's true alliance is apparent when he talks about the ongoing tensions on the island of Vieques, a small island off the Puerto Rican coast that has been the site of numerous protests against its use by the U S military as a test range For Miguel, Puerto Rico is not the protectorate of a well-meaning or benevolent United States, but a separate culture under the commanding control of a big brother that has assumed control over nearly a fifth of its land (Ironically, his father still works for the U S government, although Miguel was not at liberty to discuss the details)

I wondered how it was going to feel to regress technologically, to refuse numerous means of technologization and live and train for extended periods in an atmosphere far removed from the one he had trained in before Despite his acknowledgement that the various technological advancements used in his sport contribute to enhanced performance, he sees beyond this technological manifest destiny to something that is, for him, far more important-his family's awareness of his own culture

[I want to] let her [my wife] see that even though it's a third world country with a lot of poverty, there's a lot of pride Just let her know that it's not about money and satellite dishes and cell phones It's more about your roots and about the music and about climbing a coconut tree or going to a sugar cane field I want to let her see the way I was really raised. I think that running a track meet and killing myself and getting prepared for it I mean running in front of 100 people banging on drums and blowing on whistles is just as satisfying as running a meet on the best surface in the world with a pair of \$800 track spikes in front of 75,000 people That's what I want to let my kids see

While Bale's (1994) predicts the emergence of the thoroughly cyborgified sports venue where spectators and athletes are both plugged-in, at times literally, Miguel's story demonstrates that a dehumanized, cold, metallic track and field competition is but one

alternative, one horizon that might come to be. More importantly, it shows that the former vision of his sport can be resisted, though its existence not erased.

Miguel's story illustrates an interesting tie between technology and national identity, and his strong denial of anything but a superficial identification with technology is necessary to maintain the bond between himself and his island nation. The political implications cannot be overlooked either, because his willingness to forsake the fruits of American technoculture for the presumably more simple life of Puerto Rico exhibits an almost revolutionary tone. This is particularly true in an athletic culture that, while not always gung-ho about every technological innovation, would certainly see Miguel's position as one of either the betrayal of the performance ethos of elite sport or simply madness. After all, who would even imagine giving up relatively simple technologies like whirlpools, ultrasound, and engineered nutritional supplements in favor of, in his words, "seeing a mango on a tree and eating it right there."

As he admitted, however, even in the "Third-World" technoculture of Puerto Rico, it would certainly not be necessary to live a hunter and gatherer lifestyle. In fact, when I asked about their facilities Miguel quickly pointed out that their Olympic training center is virtually on-par with the U.S. center in Colorado Springs. Therefore, although he will give up some level of technologization, Miguel is not so much resisting technology as he is cognitively preserving his sense of belonging to Puerto Rican culture and his self-image as a "common," grounded Olympian.

He recognizes the potential for an increased quality of life, but he is frustrated by the lack of access poor people and less developed nations have to even the simplest

innovations. At the same time, he also sees technology as contributing to laziness. To this day there are still many technologies that Miguel refuses to use, or that he employs only when necessary. He even forsakes seemingly innocent devices like gas grills, because he considers buying the charcoal and cleaning out the ashes as part of the gestalt of barbecuing. Similarly, he dismisses devices like heart rate monitors because “knowing pace is just part of running.” In essence, Miguel’s story is a bona fide portrait of someone who has decentralized technology and who has established meaningful focal practices that help prevent him from becoming a runaway cyborg and victim of the device paradigm. Gas grills and heart rate monitors are efficient means of completing their particular tasks, but for Miguel they do so at the cost of a rich engagement with decidedly non-technological processes that he enjoys.

While he is unsure of his future in the ranks of the world’s best half-milers, he sees performances in his event reaching a plateau, and points out that in track, “we’ve already experimented with the fastest surfaces, the best shoes, the best angle for your foot strike, your diet.” Where he does predict immense gains is in the African nations, and regards increased access to technology among athletes from nations like Kenya, Ethiopia, and Nigeria as a Pandora’s box of performance.

Ted: So, you see the performances in the 800 leveling off for a while?

Miguel: I think more technology is going to be available to the Africans, the poor African nations. Now that South Africa has opened up, I think that more technology will be available there. Increased access, as well as increased medical as far as getting more trainers that are gonna help create more longevity. I think the Americans have pretty much hit their apex. The Europeans too. I think that the Africans are the ones that are really going to raise up the bar.

Time will tell whether African runners “raise the bar” via greater engagements with technology, or whether they, much like Miguel, choose to limit their cyborgification. Whatever the outcome, it will undoubtedly be influenced by corporate interests with a technocentric mindset that, some have argued, threaten to undermine what has traditionally been a cohesive, nationalistic running community (R. Chepyator-Thomson, personal communication, November, 1999).

Perspective and balance in a cyborg age?

Miguel’s journey from gravel track to Olympian and suburban-dweller himself is a story of strategic cyborgification and the struggle to maintain psychological ties with his native culture. He is fully willing to sacrifice the technological luxuries of America, at least to some extent, and yet he feels comfortable with his appreciation and employment of sport technologies. Miguel’s emphasis on running for the love and communion with his native culture rather than Olympic glory or financial or ego gain is a sport specific means of holding onto a version of reality that also makes his story one of agency with respect to technology as well. His is a cyborgian tale capable of supporting a belief in God as the creator of his body, and simultaneously allowing room for a secularized enlightenment vision of the self-as-mechanical cheetah. The cyborg has a conscience, a sense of family and national pride, and above all a sense of balance not characteristic of world class athletes.

I end Miguel’s evolving portrait of technological identity with an extended quote that shows how far he has come in reconciling technology, identity, culture, and embodiment. In addition, these final thoughtful words are evidence that the process of telling his story

has created a space in which he was able to articulate, and hopefully attain a better understanding of, his engagements with technology

I just came to the realization during this conversation that even though I started running on a cinder track with tennis shoes, I was still one of the best athletes to ever come out of this university, and I ran in two Olympic Games. To me, no matter where you come from, it's just what you have. I look at guys now, they'll buy \$300 bats, pay \$50 a session for a personal trainer, and I think about the times we used to play stickball. All of the Puerto Rican and Dominican baseball players. All the players from Cuba. We started out playing with a broomstick, so we developed maybe a better hand-eye coordination than U.S. kids who have these \$300 bats, \$50 lessons. I look at some of the people that I end up charging \$50 a session for me to train them. I see what they have versus what I had. I look at the Sammy Sosas. I look at the Roberto Clementes. These guys had nothing. They used to wrap their hands and use those as gloves, or use a glove that's fifty years old held together by shoestrings. They're out there hitting seventy homers.

For Miguel, technology is but one factor that contributes to athletic success, and the beauty of sport, in general, is that there are elements that, much like the intricate and fluid movements of the body, cannot ever be replaced by all of the technology on earth.

Postscript

As Miguel's narrative was going to print, he called to respond to a couple of additional background questions I had e-mailed to him. He informed me that he was abandoning his attempt to run for Puerto Rico in the upcoming Sydney Olympics, mainly because he felt that he wasn't in good enough condition to make any impact. As he said, "If I'm not out there at 100% then I'm not out there at all." When I asked him how it felt to fall short of his goal, he immediately began talking about his future training plans that will culminate at next year's World Championships in Edmonton. Whether or not he regains the form that helped him become ranked in the world's top 10 by age 21 is, of course, uncertain, and perhaps he truly doesn't want this himself. Regardless, he has seen

both sides of the technological coin, and seems content to be a relatively unassuming cyborg, a mechanical cheetah draped in the flag of his beloved island nation where goats and military test sites coexist in a truly cyborgian landscape

As we ended our conversation I could hear his young sons in the background, and every minute or so Miguel would direct some words at them in Spanish. His talent, even at the “old” age of 28, could surely carry him to Edmonton, but as we said goodbye he was only interested in carrying his young offspring to bed

Final note to reader: During the extended interviews from which much of the preceding narrative originated, the participant’s pager and cellular phone rang more times than I could count. The irony should be apparent

II. Anthony

Introduction

According to Simon Eassom, a prominent scholar in the area of sport technologies, “the notion of being human will become whatever we want it to be” (quoted in Farrey, 2000). By “we”, Eassom is referring to a sporting community that consists of athletes, coaches, administrators, and the general public. This posthuman horizon may, indeed, lie ahead, but just don’t count Anthony among those who are willing to accept a radically new era of cyborg competitions.

If Anthony’s story were developed into a television special depicting his technological life, it would *not* rely on a lavish budget or crisp, digitized color. In all probability, it would be a black and white production with a 1950s feel, and his character would be

played by a bulked-up Cagney or Brando. This is not to say that his experiences lack excitement or drama, for the narrative of an opinionated, intelligent man with a robust personality who just happens to be representing the United States in the 2000 Olympic Games is ripe with both. Rather, his technological life history seems far closer to Orson Wells than to George Lucas, and the protagonist himself is a kind of sportive John Wayne, a throwback to past generations of American field athletes.

Anthony has remarkably little to say about his childhood, and he describes his upbringing in suburban areas in the northeastern U.S. as “just a typical existence.” (I got the sense that they may have filmed Oscar Meyer or Wonderbread commercials somewhere on his block.) It may have been “uneventful,” as he phrased it, but the first story he told gave an indication that, at least in part, his current engagements with technology have their roots in his youth. As he explained, he tended to get into minor trouble in grade school, and his punishment was having to complete math workbooks, something he excelled at and was even competitive at. Before long, he had developed a true appreciation of numbers and mathematics, especially problem solving, and he admits this may have contributed to his being “methodical, thorough, and regimented” in most aspects of his life. Imagine a middle-class, massive, white kid from the north with a thought process not unlike Mr. Spock. He ties these personality traits to his approach to sport, and views the tedious process of day to day training as a sacrifice that allows him to eventually have fun during competitions. As the remainder of this text will hopefully show, Anthony’s methodical nature and his appreciation for working through problems

on his own manifest themselves in important ways in his relationship with technology and his views of its place in his sport

The false promise of educational technologies

Even before he became a world-class athlete, Anthony expressed negative feelings towards technology in the context of education. The source of this disdain relates, as the following exchange illustrates, to his perception that an over-reliance on technology sabotages students' abilities to develop an understanding of the mathematical process by working through problems, rather than instantly arriving at the answer.

Anthony: Technology never really played much of a part in my life, and actually, I have my masters in education and I have a real aversion to technology in the classroom. I don't think it has any real part academically. I don't like calculators and I don't like spellcheck and all that other stuff.

Ted: Can you talk more about that?

Anthony: I think that we do an incredible disservice to students these days by allowing them to use calculators because they don't have a clue how to actually. Their education is about learning how to program technology rather than becoming educated themselves. Like, when I do my student teaching I was shocked at how many students didn't know how to do long division—just didn't have a clue, you know, can't add, subtract, multiply, and divide without a calculator. Simple things like 7 and 9, take your pick—add, subtract, multiply, or divide the numbers and they're sitting there going [makes motion like counting on fingers] seniors in high school. I think that's due to calculators. I think that there's a time and a place to use them, and once you get out of school and have that base knowledge it's a different situation than when you're sitting in a classroom trying to figure out. When you're in school I think part of the responsibility of the teacher is to teach you what makes sense and what doesn't, and if you sit with a calculator and sit there and add a column of numbers, a lot of times kids just don't put it together that that might not make sense, that you might have hit the wrong button or done something incorrectly because they have no feel for what numbers mean anymore. To them, numbers are just a representative of something that you can plug into a calculator, and they don't have a feel for the math anymore. They don't know how to estimate. They don't know how to ascertain whether their answers are right or wrong. I think that's a great irresponsibility and injustice on the part of the education system.

In short, while many educators, including those in physical education, have welcomed the technological revolution within the classroom, Anthony is not impressed with its potential in any educational setting. In fact, the preceding passage leaves no doubt that he views many uses of technology as interfering with the process of learning, and blames devices like calculators for the inability of students he has tutored to complete even the most elementary of tasks. Technology is not a liberator, but a crutch whose use has been so prolific that more knowledge is gained about how to operate the instrument than about the practice of mathematics itself. In fact, while positivists might argue that science and technology yields *the* answer and a portrait of a singular, verifiable truth, Anthony contends that the promise of technology in this setting is illusory and ultimately empty.

Ted: So, I'm hearing you say that there's almost a distance that's created from the knowledge and the ?

Anthony: Yeah, there is no knowledge. Even here when I tutor people in calculus I'm shocked. At my previous school you never would have been able to bring a calculator to class, especially not one that can integrate for you. Here, I tutor some of the athletes and I ask them, "Do you know how to integrate?", and they're like, "Well no, but my calculator does. My calculator does it for me." That's a nice thing but calculators are *wrong*. There are times when calculators are wrong, and what I try to make people understand is that when you work with a calculator, 66666666 is not the same thing as $\frac{2}{3}$. That's something that students even 5 years ago, 10 years ago could understand that difference, and nowadays there's no difference because when they look at their calculator it says 6666666 and to them that's the answer and that's not the case.

Ted: So people, students at least, are looking the bottom line is what the technology dictates the answer is?

Anthony: Yeah. Technology has taken away a lot of our free thought, a lot of our mentality you know? It's just been eliminated by the fact that technology can handle it for you. It's made you still have your incredibly smart people who don't need it, but what you're lacking now is I think there's a giant gap in the knowledge level between students. You have your smart people who don't need calculators or spellcheck. I don't want to make any claims to what their family lives are like, but I'd be willing to bet that they've got parents who are very strict on making sure that they do the homework and that they learn things. Then you've got students who just slide by using the technology and when you do that, and you walk into a situation

where you can't use technology, you get into a lot of trouble That was one thing I noticed as a student teacher is .it was just disgusting to me, the dependency on technology

The language Anthony uses to describe the relationship between less advanced students and technology provides further evidence that he is almost resentful towards an American educational system that he considers complicit in allowing students to "slide by" using technological learning aids, and it is evident that he truly fears for those who might be unable to function without the support of calculators and the like

Finally, Anthony sees the growing dependence on technology as having come at the expense of hard work and dedication on the part of teachers, and as he eventually reveals, athletes in his sport While he admits that the internet can be used productively in the classroom, he places the responsibility for such use on the ingenuity of skilled and enthusiastic teachers, but in the same breath he expresses doubt over whether such instructors still exist in large numbers He adds that, much like many blue-collar occupations, those who have not kept up with the digital age have become living anachronisms that have little relevance in 21st century schools

I conclude this section with a bit of subtle irony As I was searching for the results of Anthony's recent competitions to see how his season was progressing, I found myself on his internet homepage from his previous school. It featured a large color photograph of him throwing the discus, as well as links to track and field sights, including one that focused exclusively on the throwing events Technology may not be a prominent part of his own sense of identity, but it is through the vast resources on the web that others encounter Anthony, his athletic self extended into cyberspace for the world to see

He-men in the house: The events and implements

Anthony is currently ranked in the top 25 in the world in the discus and in the top 5 in the shot put, and while the aim of both events is the same (i.e. to throw the furthest distance), he sees each quite differently. The discus itself is shaped like a flying saucer, with a wooden exterior, a steel center, and an outer ring that is weighted according to the desired spin of the thrower. Like most of his peers, Anthony is a rotational thrower, which basically means that he spins his way from the back edge of the throwing circle to the front. As he describes it, there are five essential elements in both the shot and discus:

It's very simple from a broad perspective. You start on two feet, turn on your left foot, sprint to the middle, turn on your right foot, and turn your right foot hard and stand up through the finish. I did a clinic this weekend and that's how I presented it to the kids. That's it, and really that's all that there is to throwing.

His description belies the incredibly technical nature of both throws, however, and while he summarizes the process as consisting of these basic elements, he was quick to add that there are numerous other components, such as keeping the body on-line and maintaining a sense of rhythm, that contribute to a successful effort. He is also adamant that, because of the complex elements in each event, the drive towards a perfectly executed throw is a goal best abandoned. As he states, "A lot of people get caught up in trying to make it (the throw) perfect." In summary, the throws may be measurable, but they are defiantly beyond the scope of verbalization.

There's really no words to describe it. If you come to practice, there's not a lot of words being used. There's a lot of sound effects, because there's really no way to explain it to someone who doesn't do the event, and probably someone who doesn't do the event at a reasonably high level.

I was also interested in how Anthony viewed the technology of the implements themselves. I can remember being very aware of developments in training shoes, so what about changes in the designs or materials used in his events? Given his take on calculators, I certainly did not expect him to paint a romantic picture of the wonders of technology as they apply to the shot and disc. True to form, he seemed unimpressed by the objects he hurls further than almost everyone in the world.

The implement itself is indescribable. The shot is 16 pounds and the discus is 2 kilograms. There's really no way to describe them. The shot put is a hunk of steel. It's a chunk of metal that you throw. The discus is a little bit more artfully done. There's a little bit more care taken in creating a good discus, but really it's just metal with two pieces of fiberglass attached to it. My discuses are sitting on the floor in my house. I have a bunch of my practice discs that sit out in the track shed all year long. I don't leave them out in the rain or anything like that, but I don't get so anal that I sit home and polish or anything!

While this quote certainly discounts the existence of any kind of emotional or ritualistic relationship between Anthony and his implements, the interface between he and they are especially interesting on a phenomenological level.

On his best throws, a sense of oneness exists between athlete and implement as he travels through the circle. The implement becomes an extension of the hand, and the distance of the throw is a product of this interface. However, both the shot and the disc also work against the thrower's efforts, because the centrifugal force created during the spin exerts a pull in the opposite direction. As Anthony points out, he has to have an incredible amount of strength just to keep from being pulled "off-line" by the implement. This antagonistic dance between athlete and implement ends with a catharsis of sorts that speaks further to the relationship between Anthony and his implements.

I have personally seen people kiss their bowling balls before they approach the lane Anthony's shot put receives no such affection First, there is the brutish roar upon release, and then it lands with a thud and buries itself in the soft turf as if it were ashamed of the way it was treated A psychoanalytic therapist might even interpret the forceful launch and landing of the metal ball as a kind of displacement of physical abuse The hero raises his arms and points out at the poor sphere embedded in the dirt The nature of the event, it seems, requires this sort of love-hate interface

While the discus receives essentially the same treatment, Anthony is very attentive of it, especially on windy days, because the flight path of the disc can be greatly affected by wind conditions At present, there are no studies which would indicate that throwers can adapt their release angles, which at elite levels ranges between 33 degrees and 38 degrees (I A A F , 2000), to accommodate the wind conditions However, Anthony describes one athlete who has this ability, and who, perhaps not coincidentally, won the Olympic Trials on a breezy day The following exchange illustrates the importance of properly reading the wind's direction, and how Anthony is, at times, able to use technology to aid him in this task

Anthony: Even if there's no wind, there might be pockets of denser air You can really see it You can see the discus If you're experienced and have a good eye, you can see the disc fly differently depending on where in the sector people throw it. You learn to look for these things

Ted: So, you're really attuned to the flight pattern and what causes it?

Anthony: Yeah The nice thing about being in Europe was that you get the jumbotrons and they film the flight of the discus so you can turn around and see what the disc did I'd rather see what my disc did than what I did I can get a better feel for what I did wrong based on what the discus flight did

Anthony's use of the giant jumbotron screens to track the discus is important for two reasons. First, it illustrates how intimate the relationship between himself and the implement really is, because, as he states, he is able to somehow connect the knowledge gained from watching the discus with what his body must do to correct any errors in technique. Moreover, he relies on the video image to help him decipher atmospheric conditions, something that simply tossing grass into the air could never accomplish. Second, his noted observance of the jumbotron also supports Bale's (1994) claim that increasingly cyborgified sports arenas are becoming intimately tied to the competitions they house, and the athletes that take part in them.

Besides the wind, another external factor that affects Anthony's performance is the condition of the throwing circle itself. A certain amount of friction between the athlete's shoes and the surface is necessary to generate the ideal rotational velocity. If there is too little friction, the athlete loses velocity during the spin phase. In contrast, too much friction slows the rotation further than necessary and velocity upon release is decreased. While throwers' shoes do not get as much media attention as Michael Johnson's gold spikes, technological developments in throwing shoes have had to account for the degree of friction between the circle and shoe surface.

Image is nothing, feeling is everything: Technology and embodiment

Given the aforementioned technical aspect of the events, Anthony's background in mathematics, and his love of problem solving, one might assume that he would naturally gravitate towards reductionist methods of analyzing and correcting performance. For Anthony, however, this is far from the case.

I asked him if he saw any parallels between students' use of calculators and the use of technology in his events. This led to a fruitful exchange in which he describes how, just as students are not able to "feel" math problems, athletes who rely extensively on videotape build up such a reliance on visual feedback that they no longer pay attention to how the movement feels. Instead, they defer to what the videotape indicates their correct position should be. As he explains it:

When you look at videotape, a lot of times you see that what you're feeling is not what you're actually doing. So you begin to change what you're doing to make it more like what you feel, and that's wrong. I don't want to be looking at a videotape like two years ago I felt like in mind that I was directly over the top of my left leg as I was turning out of the back of the circle. I felt like I was perpendicular to the ground and right on top of it. I felt great about that. That was what I wanted to do, and I was throwing far. But then I went back and looked at the videotape, and it showed that I was actually leaning tremendously over my left leg. It pissed me off because that wasn't what I was feeling. I was feeling that, "I'm directly over the top of it. This is where I want to be is right over the top of the left leg." So I started experimenting and trying to get directly over the top of it and I was just living on the videotape. I would take a throw and look at the videotape, take a throw and look at the tape. My throwing went through the floor. The best way for me to throw was to *feel* like I was directly over the top, even though I leaning to one side, because it meant that I was at the right angle. If I felt like I was right here, then I was probably going to be right here.

Ted: So, much like 666666 isn't $\frac{2}{3}$, watching on the videotape is not really what you're feeling?

Anthony: Yeah. You don't want to be dependent on what you see yourself doing because you might have to feel it one way to actually do it another way. It's very common in technical events to do overcueing, and as a coach you step back. You want to be leaning to your right and trying to tap the side of the cage. Well, you're never really actually going to tap the side of the cage, and you don't really want to be leaning that far to the right. But more times than not, if you tell an athlete to do that it's going to put them in the right place. So as you develop as an athlete you're constantly reaching for that side of the cage and you're constantly in the right place. But as soon as you start going back and looking at the tape, you realize that you're not here and that you're actually here, but this is where you want to be. So, you overcue to learn things and those are all feelings and not black and white technical issues. So, when you live on videotape it can absolutely kill you.

First of all, it is interesting to note the vastly different views that Anthony has of visual feedback in the contexts of competitions where jumbotrons are present and during his training. In the previous section, technology was used to help improve performance, but here, as he states, “it can kill you.” Anthony’s experience of watching himself on videotape and the detached sense of self that accompanies it is also important, and the question seems to become one of trust. If technology in the form of videotape is simply a reflection of reality, then it must be correct, and one’s own bodily cues should rightfully be questioned or even disregarded. In such a situation the body becomes the betrayer of performance reality, because it cannot be relied upon to provide accurate feedback. Indeed, even when he does watch the jumbotron, he trusts the discus to provide more valuable feedback than his body. As is apparent from his story, however, during training he considers his own kinesthetic awareness to be the reliable indicator of his form. In short, Anthony’s belief is that, particularly for someone of his caliber, the way he feels must take precedence over what technology indicates that his form “actually” is. He goes on to illustrate what can happen to people who rely on videotape by talking about a fellow competitor:

I have a friend who . . . we’ve all watched him throw. Everybody’s watched him throw and he looks great, but how come it doesn’t go anywhere? It’s because he lived on the videotape. Rather than looking at how far it is going, if he picked up ten feet and it was ugly, he wouldn’t do it because he’s look at the videotape and be like, “Oh, that can’t be right. It’s doesn’t look good. It’s not aesthetically pleasing.” So now he’s developed into a 175 foot discus thrower and all he’s got is a beautiful technique. Well, what good does that do you?

Somewhat ironically, one of his family’s first technologically-minded purchases, along with a VCR and old-school computer, was a video camera for the explicit purpose of

taping him perform According to Anthony, however, videotape was extremely useful in the beginning stages of his throwing career when he had not yet developed the kinesthetic awareness he has now He did not live on the videotape He merely visited for a short while

He went on to tell another story that demonstrated how adamant he is against a strictly quantified and technocentric approach to performance in the shot put and discus He recounted his experience at a recent seminar that was headed by a former four-time world record holder in the discus Because height is important to success in the discus at the elite level, the coordinator was puzzled by the fact that Anthony had thrown within a few feet of what he had, despite being five inches shorter, and he went to great lengths trying to determine precisely how such a relatively "small" athlete was able to be so successful The following quote clearly illustrates Anthony's feeling that, while technology may be of use to some competitors, particularly inexperienced ones, it is still unable to capture the idiosyncrasies of an individual's unique style

He's always looking at numbers He always looks at videotape He looks at force plate studies He looks at all the data that they collect on us--arm span, vertical jumps, squat, bench, clean, all your lifting numbers--and he wants to fit all those into a formula and there *is* no formula So, he's just lost, and every time you see him he's like, "Let's sit down and talk about the discus" Well, there's no reason to sit down and talk about the discus

He elaborates on the paradox of a highly technical event that he believes is, after a point, compromised rather than aided by a technocentric approach to improved performance

The beautiful thing about track and field is that there's really no technology that can help. You've got a track, throwing circles, runways and that's it The circles that have the force plate capabilities aren't even used except for maybe once every couple of years when some higher up guy decides, "Yeah, we really need to do this" And every time, he comes in and does the study and turns around and leaves Again, I

think that the force plate studies, the biomechanical evaluations and stuff like that can be used really well to back up what you do I used those studies just to kind of convince me that I'm on the right track, but I would never live and die by them

His statement that "no technology can help" performance is clearly overstated and self-contradictory, but the tone of his comments shows that he does, in the end, view technology as a tool rather than *the* answer He has used it and discarded it, and he has little interest in the efforts of the "higher up guy" and his scientific studies

For many in Anthony's sport, then, the logical way to gain an advantage over less technologically endowed competitors is to employ any and all technologies at their disposal According to Anthony, however, regardless of how effective any technology is at enhancing performance, there are still intangibles that can contribute to a more "natural" athlete overcoming his or her opponent As an example, he offers the following thoughts on the film Rocky IV, which suggest his belief in powers far greater than the latest sport technologies

It's a movie, but Drogo's sitting there with all the technology in the world and everything, but you can't replace the fact that Rocky has the heart I think that's where athletics is, and that's where technology in athletics sometimes can be used as a benefit, but a lot of times it's nothing but a detractor It takes away from the raw emotion of it

Regardless of whether or not we find it plausible that a mutant-like Drogo could ever lose to Stallone's character, Anthony's notion that human will, determination, and mental strength can overcome mere technology is important in understanding his larger story of cyborgification. This will become readily apparent later.

Healing "unplugged"

An American athlete ranked among the world's best has access to virtually any type of technology he or she desires. In particular, injured competitors have a variety of rehabilitative technologies to choose from, many of which are only available at Olympic training centers. In Anthony's case, however, a number of disappointing experiences with the medical profession led him away from the latest technologies and towards more traditional methods of healing. He is quick to voice his skepticism of the sports physicians, their emphasis on new technologies, and what he considers to be a narrow-minded approach to the body that fails to acknowledge alternative ways of healing. As he explains

When I broke my wrist, I had surgery. I had two torn ligaments and the scaphoid bone was in two pieces, and it's still in two pieces. I had some idiot doctors and they didn't find it until the following year when I broke my hand. So, we went in and they did the surgery, and afterwards I did a lot of rehab. I believe very strongly in alternative medicine. I'm not some freaky guy who goes to an herbologist, but I believe in chiropractic and acupuncture, applied kinesiology. I've used all of those to try to overcome injuries, and I've had some serious idiot doctors who have not helped me at all with overcoming the problems that I've had.

Despite the recent advancements in technologies designed to aid the healing process, Anthony has sought help from skilled *human* hands, an act that stands in direct defiance of the sportive device paradigm. He also believes that the sport of track and field, in general, is slowly beginning to rely less on rehabilitative technologies and more on these

sorts of practices “At the Olympic Trials,” he states, “there will be more chiropractors than doctors There will be more massage therapists than doctors ”

Laser triangulation: A concession to technology

While Anthony resists most rehab technologies, as well as those used to scrutinize his form in an attempt to determine why he is able to throw far, he is extremely concerned with objective and precise measurements within the competitive arena This relates to his desire to see an increased use of laser triangulation to measure the distance of shot and discus throws in major competitions Traditionally, the distance of a throw was determined by officials who ran with a tape measure from the front of the circle to the point where another official indicated that the shot put or discus had landed This method, according to Anthony, has several potential flaws First, fiberglass tape measures stretch over the course of a competition, and by the end of a meet an extra centimeter may mean the difference between medalling and not medalling As he points out, in the 1996 Olympic shot put finals, only six centimeters separated second through fifth place

In laser triangulation, a laser is placed a pre-set distance from the throwing circle, which serves as the zero angle After the throw, the laser is fired to a receiver held by an official positioned at the implement's point of impact The distance of the throw represents the last leg of the triangle, the length of which is calculated using Pythagorean's theorem At least hypothetically, this cyborgified measuring process removes the possibility that a judge may intentionally or unintentionally arrive at a distorted measurement because of a bias towards an athlete or simply because he or she

failed to recognize a slight twist in the tape As he put it, “It takes the human out of it ” Thus, the human element that is so crucial for Anthony in solving math equations and determining ownership of a given performance is, in this context, seen as a liability.

Despite his willingness to remove the possibility of human error from his own event, however, he remains opposed to the widespread use of technology in other events

You always talk to people who want to use even more In the long jump they want to use a laser beam across the front of the takeoff board to do foul calls That’s crap! It hasn’t worked in tennis, so what makes you think it’s going to work in track and field Some people want to set up a sensor on the toeboard and around the outside of the circle, and if you touched the sensor it would go off That’s not gonna work! Track and field works just fine

It works just fine, of course, as long as you are not a long jumper who is called for a questionable foul on your final leap This quote is a clear example of how difficult it is for athletes to provide rationales for closing the technological floodgates once they have been opened

Passing on the “juice”: Drugs, identity, and ownership of performance

The topic of self technologies, especially banned substances, seemed to get at the heart of Anthony’s interfaces with technology and the ethics he relies on to make decisions on what is and is not acceptable He asserts that he would never take performance-enhancing drugs because they are illegal, and thus taking them would qualify as cheating Secondly, he considers doping unethical as well, and from the following quote it is obvious that he feels an obligation to uphold his status as a teacher and role model, as well as his belief, romantic as it sounds, that hard work is the only acceptable road to success in sport

I still consider myself a teacher even though I’m not teaching, and I am coaching

How can I possibly come into practice every single day and expect my athletes to give everything that they give, and how can I expect to be a role model for them and be doing something like drugs. The thought of testing positive disturbs me. I mean, even sitting back and thinking, "Oh my God!" What would happen? How could I ever look at my parents? How could I ever look at my athletes? How could I ever look at my students? There's just no way, so I've never even been tempted.

Equally as important as ethical issues, however, is his powerful belief that substances like steroids irreversibly alter the body and its chemistry to such an extent that it is impossible to determine how far an athlete using these drugs is really capable of throwing. He points to the now infamous case of Canadian sprinter Ben Johnson, who was stripped of his world-record setting gold medal effort at the 1988 Olympics after testing positive for steroids. In Anthony's mind, Johnson's drug use compromises our ability to say that it was he, and not the foreign substance, which was responsible for his performance.

Look at Ben Johnson. How fast is he capable of running? He doesn't even know that, because once you take the drugs it changes your body's biochemistry and once you do that you're never really clean. So, to me I know. You ask me how far I'm capable of throwing? Well, that's an unknown question, but at this point it's (over 70 feet) and (over 220 feet). There's not a doubt in my mind.

When I asked whether or not he might consider taking drugs if they were legalized, I was not surprised that he maintained that *any* performance that resulted from such modes of self-technologization would not truly be his, and that using drugs would tarnish a constituent part of his athletic identity.

If I start taking drugs, *I'm* not throwing anymore. I'm not me, with my physical, chemical, psychological makeup. Every aspect of my person has been altered by the drug. There's no doubt it has psychological effects, it definitely has chemical effects, and there's no doubt that it has physical effects, in which case am I still the same person trying to do what I'm trying to do now? I don't think so.

He further elaborates on his strong identification with technological minimalism by drawing a parallel between himself and Casey Martin, the professional golfer who won the right to use a cart in tournaments because a debilitating leg ailment prevents him from walking the course. While he expresses some sympathy for Martin, he continues to assert that, in the name of fairness, competitors must essentially come as they are, whether this means refraining from using a cart or any sort of performance-enhancing technologies. He offers the following view of Martin's situation that shows just how strongly he feels about the established rules of a given sport:

If he goes and wins a tournament, has he really won the tournament? Has he competed on a level playing ground? Has he really beaten Tiger Woods? Has he proven he's a better golfer than Tiger Woods? I don't think so. He's proven that he's half the golfer that Tiger Woods is because he got rid of half of the equation, half of the problem. I mean, go play the Nike tour in Japan where they don't mind. Go ride a cart, but then you're competing against people who ride carts, and if you're the best player there, great! Make yourself some money and have a good time.

While Anthony's sarcasm here is somewhat harsh, this quote provides insight into his thoughts about the prospect of an openly technologized track and field. A cyborgized Olympics would be ethically permissible as long as it was made explicitly so, and the competitions kept separate. While the performances seen at such events would likely be superior to the lesser-technologized competitions, however, they would still be deficient in his eyes because of their reliance on external, and thus artificial, means. It remains pure speculation, though, whether spectators would choose "natural" effort over "artificial" world records.

Despite the strength of his rationale for not ingesting banned self technologies, he realizes that others do not share his view, and that many of his competitors are currently

using drugs and the like. More than any other event, in fact, the shot put has been riddled with positive doping tests, and all three medallists in the 1992 Barcelona Olympics had previously been convicted of steroid use. The same is true of the 1996 Olympic gold medallist, American Randy Barnes, who is now serving a lifetime suspension (Hoberman, 2000). Needless to say, there is ample evidence that athletes in this event, as well as the other weight events (i.e. discus and hammer throws), are transgressing the established standards of cyborgification by ingesting any number of banned substances. The possibility that Anthony might suffer, in terms of competitive success, because of others' transgressions is reflected in the following commentary on the technologies used to test for drug use:

Drug testing is about as fallible as anything else. There's all kinds of people doing drugs and not getting caught. The biggest problem with drug testing is that the testers are always a step behind everybody else. At least a step behind. It's an imperfect system but at least it's a system. The USOC wants to spend all its money on drug testing? Hey, that's perfect. Let's eliminate the people who are on drugs and maybe I'll move up higher in the world standings.

This quote is an indicator of Anthony's willingness to sacrifice privacy, his own as well as his competitors', for the sake of more rigorously policing the "purity" of the sport. While such a stance clearly supports the existence of a "doping hegemony," in which athletes see the increasingly intrusive testing procedures as being in their best interest, it is also true that, for Anthony at least, draconian measures may increase the likelihood that his status will rise as his "dirty" rivals test positive. The problem here, however, lies in the testing methods and equipment themselves, which Anthony admits are not full-proof. In fact, they can fail in two ways. First, they can fail to detect drug use. As Hoberman (2000) notes, the testing procedures, even according to those on the IOC doping panel,

are often incapable of detecting the latest designer substances (Hoberman, 2000) In a game where the mouse is always ahead of the cat, there is always a possibility that those unwilling to play the game will have a tougher time reaching the top of the podium Second, testing technologies can also yield false positives In either case, Anthony sees drug testing technology as a necessary, though imperfect, means of defending the sanctity of athletes' bodies, and by extension the purity of the sport in general

In an effort to clarify exactly where Anthony draws the line between the "self" and technology, as well as to allow him to elaborate on any differences between different types of technologies, I asked him to talk about whether or not he views his best performances as tainted because they were aided, in effect, by his use of rehabilitative practices

Ted: I'm going to play devil's advocate now What if someone said, you shouldn't have thrown 70 feet because you broke your hand and went to an acupuncturist? What is the difference?

Anthony: Well, the biggest difference is that I didn't insert anything into my body to help me heal The thing with acupuncture is that it stimulates your body's own healing mechanisms to come and heal you I don't look at ibuprofen as being a drug I just personally don't like what it does to me But I don't see it as being this giant evil that, "You take ibuprofen you're not a real athlete anymore," because the IAAF and the IOC make distinctions in their performance-enhancing ability, whether they're performance enhancing or not, and that's the big thing I mean, it's like marijuana If you want to smoke marijuana, that's fine Go ahead It's illegal, but it isn't going to make you a better athlete in our sport In some other sports it will I don't agree with the IAAF testing for marijuana for no reason other than, if the USOC thinks someone's on marijuana call the DEA Let them do it because that's their job The USOC is not out there trying to police the laws of our society The IAAF and the IOC are trying to make sure we're all playing on a level playing field So, anything that you wanna do that's not performance enhancing go for it I mean, there's talk of making creatine illegal Well, creatine is just a dietary supplement If I wanted to, I could eat the meat, but the volume would be incredible Are you gonna tell me next that I can't have a low-carb, high-protein diet? There are things that you can do to alter your performance, like drinking enough water, like a good diet, like training regimens, and those are the things that can be the difference

Anthony sees his body and its healing process as self-contained, and to allow foreign substances, especially those that have been deemed performance-enhancing, into its borders is a violation of his sense of self. He also acknowledges the I.A.A.F.'s and IOC's shaky distinction between performance-enhancing and non performance-enhancing drugs, and argues that substances that are not proven to be performance-enhancing for track and field athletes should be monitored by the DEA instead. This is somewhat ironic, of course, considering that the former White House "drug czar" has been involved in the formation of an "independent" testing agency that would have unlimited access to test for virtually anything.

The preceding quote also reveals the difficulties Anthony confronts in attempting to construct boundaries between different self technologies. The best example of this is his assertion that athletes can take anything they want as long as it's "not performance-enhancing" and his subsequent statement that, "There are things that you can do to alter your performance, like drinking water, like a good diet." He resists things that the legislating bodies of his sport claim aid performance, and yet he clearly realizes that there are numerous unregulated substances and practices that are performance-enhancing as well. Creatine certainly has not been found to promote muscle gain to anywhere near the extent that steroids do, but by his own admission it would be impossible to ingest the amount of meat necessary to get the benefits of just a few teaspoons of the currently legal creatine. At the same time, he recognizes how ridiculously far the regulation of self technologies could go, and understands that what is labeled as a dietary supplement today could be a banned substance tomorrow without his consent.

Several times in our discussion, Anthony took an explicitly Darwinian line with respect to his own cyborgification, and as he stated, "There are some things that your body is not intended to do, you know?" So, just as he has little sympathy for Casey Martin's physical liabilities, he does not allow himself to view his lack of height as an unfair advantage to his competitors that could justify the use of technology to augment his own body. This "survival of the fittest" attitude, as he calls it, is clear in the following passage:

If I was 12 years old and they said I was only going to be 5'8" and I went in and had bone graphs put in to extend my body to make me a better discus thrower, is that fair? No. I've changed what I am in order to alter my ability to compete. They have this argument all the time with disabled athletes, with heightening themselves with their prostheses in order to change the leverage. That's something I fight every single day, because I'm competing against guys that are 6'6", 6'7", 6'8", they can do things wrong that I can't even hope to do, because if I did it as badly as they did it, I'd lose 15 feet. But because they are as big as they are they can afford to do it, and I'm still not about to have some procedure done to lengthen my arms or make myself three inches taller. As asinine as that sounds, it's the same thing as taking drugs.

Final thoughts

While Anthony is subject to the occasional tirade against technology in all aspects of society, his main gripe centers not on technology itself, but the emphasis he sees many people around him placing on it. After his initial statement that technology plays only a very minor role in his life, he offered a more thoughtful summary:

I'm not anti-technology. I think it's got a great place in this world, but I think that we're really dumbing down our society by depending on technology so much.

Technology has its uses and Anthony is surely dependent on it in more ways than he would care to admit. He also sees the device paradigm at work, however, and he clearly is not happy about it. Whenever he sees technology becoming a crutch, this is when the

next tirade begins Whether it is calculators, steroids, or golf carts, Anthony is not one to take the easy road, and in fact he surely loves the hard road He is not Rocky, however, nor is he Drogo

Ultimately, while he identifies only peripherally and in a detached way with technology, his own views are necessarily, though not completely, contingent on the paradox of this particular moment in the history of elite track and field He admires the attitude of the throwers in the 70s and early 80s who traveled around the U S and Europe searching for the most hospitable conditions to throw far, even though he recognizes that part of the reason many of those athletes set standards that were only recently eclipsed is because of their use of performance-enhancing drugs In truth, they competed in a lost era where steroids and other substances were simply accepted as one aspect of achieving the goal of throwing far

Postscript

According to virtually every track aficionado, the 2000 Olympic Trials shot put competition was the greatest in history, something that the competitors, Anthony included, had been predicting for some time On his sixth and final throw, he fulfilled his dream of becoming an Olympian by letting loose a lifetime best I couldn't quite tell from the camera angle, but as he jumped around in celebration I thought I saw him look up at the jumbotron

III. Tyler

Introduction

The 3,000-meter steeplechase originated in 19th century England as a human replacement for horse races that were cancelled because of muddy conditions. The first events followed a two-mile course through local meadows near Oxford, and included hedges and water-filled ditches that competitors had to jump over en route to the finish (www.iaaf.org, 2000). The modern event covers just under two miles, and runners must negotiate three wooden hurdles and a single water jump each lap. Conversations about the steeplechase today inevitably center on the topic of Kenyan domination, as runners from this East African nation have won the gold medal in every Olympic Games steeplechase since 1984. Even more impressively, a single athlete, former world-record holder Moses Kiptanui, won three consecutive World Championships finals from 1991 through 1995.

All of these historical tidbits were the last thing on Tyler's mind during the last lap of the steeplechase finals at the 2000 Olympic Trials. As the bell sounded, the two leaders were far out of reach, and Tyler was at the back of a string of four other runners fighting for the final spot on the team. Charging down the final 100 meters, he wondered if he was even going to be able to lift his legs over the final barrier, but at the finish the clock told the story. Tyler had finished third by less than 20 seconds. At the post-race press conference he thanked his coach, and I wondered, "Should he be acknowledging technology as well?" The pages that follow will, I hope, help us decide.

Class awareness and ownership

Tyler grew up in a single-parent household with his two older brothers, and even though his mother often worked two or three jobs there were times when his diet consisted of peanut butter and jelly sandwiches for lunch and dinner. At one point the family even moved in with grandparents because they were at risk of losing the house altogether. These events contributed to the development of a strong sense of class consciousness, and he described how he was always aware of what his family had compared to others. "I always felt like growing up that I was always the one that didn't have," he said. Also important was the fact that his class status necessitated the sharing of most things, including the Atari video game system which, being the youngest, he was always the first one kicked off. He took pride in what his family did have however, and recounted a story of how he was meticulous in his favorite chore, mowing the lawn, in an attempt to make it look more "prestigious" than it was.

The first possession that Tyler owned exclusively was a BMX bike and he raced in local events for a short period of time. As with other possessions, he cared for his bike and cleaned and polished it regularly. In fact, because sole ownership was so rare, the things that he did own by himself took on a special meaning. This included running as well, because ever since he was young the one possession that he felt he owned exclusively was his running. "The training was pretty solitary and individual as well," he said, "which only reinforced the personal ownership."

As he grew older and became more financially stable through his running and part-time career as a financial planner, he maintained this sense of class, and an appreciation for where he had come from

It's funny, we look at our house which is about 1400 square feet or so, three bedrooms, 2 1/2 baths, a garage, and we look at it as our starter home when we first moved in. We thought, "Maybe in four or five years we'll move out and get a bigger house." The more I've been in this house, the more I have to think back because like I said, when I do things I try to take a step back and look at just how blessed I am. This is as big a house as I grew up on, and we would wonder sometimes how we were going to pay. There were times we struggled in that house as a family, and I look at my wife and I'm like, "We're unbelievably blessed!" We're just kind of spoiled. We're a spoiled generation in that we thought, "It's a starter home. Got to go to a bigger house later."

Weighing the benefits of technology with the liabilities

Even after his initial success in middle school, where he broke the city record for the mile run, he continued running in standard issue tennis shoes. He had always made do with whatever was available, whether it was running in those shoddy tennis shoes or making football tees out of piles of dirt in the backyard because he couldn't afford even the most basic equipment. This was not a suburban cul-de-sac. This was middle-class, single-parent, do-it-yourself low-tech living. He even makes a point of connecting the absence of a father figure for several years of his life with this "fend for ourselves" attitude.

Then his stepfather bestowed upon him an old pair of his shoes, an inheritance that led to his first real awareness of shoe technologies. While some runners might not find discussions over shoe technologies all that engaging, Tyler's keen interest in sport technologies, in general, applies to his shoes as well, and he talked in detail about his. During his daily training runs and his biggest races, what Tyler wears on his feet are

almost something out of James Bond, and he disclosed that the shoe company that sponsors him spends upwards of thirty million dollars a year developing and refining shoe and apparel technology to give their athletes a technological advantage. The improvements in the shoes are made possible by other forms of technology, including computer-generated graphics that allow the engineers to adjust the specifications to suit the rigors of his event. For instance, his shoes have been designed especially for the steeplechase. The upper is made of mesh rather than heavier canvas, and additional holes have been added in the spikeplate on the sole, both of which allow water to better filter through the shoe, thereby keeping them as light as possible. He elaborates on the importance of shoe technology.

Sometimes it was just the look of the shoe, but I think you can feel like you're getting a little bit of an edge if you got a lighter shoe, whether it's mentally or legitimately physically. Obviously if you have a lighter shoe, it's going to be less strain on the body, but when you're in an 800 meters, how much does it really affect you? I think that mentally it affects you more because you feel lighter. You feel faster.

This quote reveals an interesting psychological aspect of technology that relates to the relationship between the aesthetics and perception of functionality. In many ways, what Tyler describes is much like the perception many Americans have of technology. The more gadgets and buttons and flashing lights on any mechanism, the more technological it must be, and therefore the better it will perform. The Aiwa stereo in my apartment has multi-colored lights and a digital display that indicates the precise sound output of the music I'm listening to, something that my previous stereo did not have. So, my current stereo must be better. Similarly, Tyler's new Adidas spikes have a unique lacing system and extra traction on the spike plate, so he must be able to run faster. Even though he

acknowledges that the benefits of a shoe that is one ounce lighter or equipped with a few additional spikes will not impact his performance over such a relatively short distance, he admits that there is a psychological effect that alters not only his perception of the shoe, but his ability as an athlete when wearing that shoe

Tyler is also very sympathetic to the use of videotape analysis, and the following quote reveals that he has a sense that technology can offer something that his body itself cannot.

We do a lot of filming looking at going over the hurdles That helps It's one thing to feel a certain way over the barrier, but it's another thing to match that feel with what it is Because you can't really look at yourself hurdle It's one thing to feel good but be doing it wrong, so that's where it (technology) can be the biggest benefit is with filming

For Tyler, efficiency is associated with technology, and takes precedence over phenomenological aspects of his performance. In short, videotape is not merely a version of reality, but a Truth Using Ihde's (1983, 1993) terminology, the world in this case is not interpreted through technology Rather, technology seems to replace Tyler's sense of embodiment altogether

Tyler also relies on technologies found in the training room Soon after he entered college, the demanding training schedule and the drastic increase in mileage proved to be too intense for his body to handle, and he became a regular visitor to the university's multi-million dollar training facility He recognized that an extensive use of rehabilitative technologies was the only option if he wanted to continue training at the level he felt he needed to in order to improve his times and ensure his status on the nationally-ranked squad These healing devices and practices were, therefore, not just

rehabilitative, but a sustaining force as well, and he admits that, "Half the time. three quarters of the time, if it wouldn't have been for that stuff I just wouldn't have been running " Left alone his body would rebel, forcing him to increase his mileage and intensity more gradually, but through the use of technology his body's signals barely registered as a yellow warning sign For Tyler's increasingly cyborgified self, the world was full of green lights

Without having to worry about injuries, you are free to train harder and push yourself further knowing that a good training room can help you recover along the way or even help you heal if you do get injured

These technologies are certainly separate from the body in ways that an IV, for instance, is not However, the technologies available in the training room are, in a cyborgian sense, extensions of Tyler's athletic self because without them he would not be the same competitor One could go as far as to argue that Tyler would not be one of the favorites to make the Olympic team in the steeplechase if it were not for his intimate, regular interface with technology

While he has little problem with the increasing technologization of track and field, he is mildly frustrated by the intensive drug testing procedures of the USOC and USTAF, and the amount of funding used to support them Specifically, he finds it ironic that a technologically advanced nation like the United States seems to direct more money, energy, and scientific and technological know-how to restrict U S athletes' use of technologies than it does to aid performance

In the U S I think it's [testing] been really effective In other countries I can't say the same, because I think they look at it from a different view Like, the U S is such a self-regulated country We slap ourselves on the hand so much trying to punish ourselves Other countries don't have that view It's, "whatever we have to do to

make you get that gold medal, so that our country gets recognition. If EPO's illegal, then we'll find the hormone that makes EPO and maybe that's legal." They spend the technology on finding other ways to advance around the illegal part of the rules, where the U.S. spends all the money and technology on regulating and keeping us from breaking the rules.

This quote also lends support to Shogan's (1999) contention that technologies are often used as a form of disciplinary power that forces athletes' technological stories to remain within established parameters that the athletes themselves have little voice in creating. In addition, one gets a sense that Tyler feels that athletes from other nations may be engaged in illegal doping practices with full political backing, and that, because of the misguided use of technology by the U.S. track and field bureaucracy, athletes like himself remain "clean," but at a clear competitive disadvantage.

Finally, there is, in Tyler's mind, one other downside to technological progress. As he explains in the following passage, the fruits of American technoculture and the market economy in which it thrives can be a barrier to enhanced performance in his event. Being a world-class runner in suburbia, it seems, is not the nirvana one might expect.

It's funny, because you would think that the advantage of being in a place where all this technology is around would be an advantage. But every time Phil and I go on a long run, there's nothing we'd love better than a dirt road, because as far as what's easier on the body, obviously running on a dirt road is prettier, there's less pollution, it's quieter, it's a softer surface. At the same time, when you're running in the country, you don't have the stressors of trying to be in the suburbs trying to train and make a living. In America, I think we get distracted with the American Dream. In a sport like running, we're obviously trying to create income in other ways and do other things, all of which require us to be in the city as opposed to living in a hut, running on dirt roads. Because we could do that here! There's some pretty rural places in Montana where I'm sure we could go and hit the dirt roads and never see a town for miles, but how do we support ourselves?

Tyler sees a connection between the "American Dream" and technology, and recognizes the paradox of feeling like he must remain plugged into an environment that, while

comfortable and technologically advanced, is less than ideal for his training. He sees the opportunity to live a less technologized existence, but ultimately views it as an impossibility.

In short, Tyler clearly believes that, as he states, that “too much technology can stand in the way of progress.” To further drive home this point, he told a story about a women’s track team he was familiar with, and how the coach’s extensive use of various technological means to monitor the athletes’ progress eventually led to several of them quitting the team out of frustration. He also described how many of the women were reluctant to work harder than the physiologists’ test results indicated they should. Immediately after running, they had to provide blood samples, weigh themselves, and record their vital statistics (i.e. heart rate and blood pressure). His story clearly illustrates that, while he is willing to interface with technology ever more intimately, he will never relinquish his freedom of sense of agency simply to become successful at the world level. Does he desire an Olympic medal? Yes, but not at the expense of being merely an artifact of the American sport science machine. This attitude extends beyond sport as well. For example, despite a love for his thoroughly “plugged-in” job, he still treasures helping and interacting with his clients, with *people*, most of all.

I’ve seen the needle and the damage done: Technology and the medical profession

One of Tyler’s first encounters with medical technologies was one that almost went tragically awry. When he was 17, he had several protruding varicose veins removed from his leg in what should have been a standard operation. In place of the more common epidural as an anaesthetic, he was given what was called a saddle block, in which a

needle is used to poke a few small holes in the spinal cord to release fluid that numbs the pain. Unfortunately, the medical student doing the procedure poked *too* many holes, and the excess fluid that leaked out caused him to slip into critical condition for approximately two days. While he eventually made a full recovery, this incident understandably left a lasting impression on Tyler, and as the following exchange shows, his perspective of doctors changed from one of unquestioning faith to one of healthy skepticism.

Ted: What kind of impression did that leave about doctors?

Tyler: I guess I realized the false sense of security. Since high school, the more I go to the doctors the more I realize I still trust them. I mean, they still know more about things than I do, but it wasn't this total, "O K I'll do exactly what you say. Tell me what to do." The theory that nobody knows your body better than you. In the same way I started looking at doctors the same way. This is what they prescribe. Not that I ever play around like when they prescribe medicine, I do it. I just had a different view of them. It wasn't like they knew it all. It was more like, "take what they say and what I know about my body and how I've reacted to things in the past." That's the best conclusion, not necessarily that they know it all. They're human too and they make mistakes.

This quote also indicates that Tyler reclaimed a sense of agency and control over his body and its health. As opposed to being a passive observer, he began to see himself as having a unique knowledge that was equally as important as any obtained from a medical book.

Tyler's willingness to challenge the medical establishment's diagnoses is a key reason why he is still running today. It was the 1996 Olympic Trials and Tyler was in fourth place with two laps to go. As he went over the water jump his foot caught on the barrier, causing serious tendon damage and breaking it in several places. So, rather than punching his ticket to the Atlanta Games, he was forced to meet with a series of doctors

to discuss how to repair his mangled foot. While most doctors recommended that he allow the metatarsal bones to fuse together themselves, this course of action would have certainly meant the end of his running career because of the scar tissue and the likelihood that the bones would not fit smoothly together. In fact, what frustrated him the most was his perception that most doctors did not recognize how important his sport was to him and for this reason searched out a doctor that would forego the “natural” healing route for a far more technologized one. As opposed to letting the calcification process begin immediately, Doctor C put a screw across his metatarsals to keep them separate and ensure that they remained straight. On the last day of his honeymoon nine weeks later, Tyler resumed training.

The relationship between Tyler and Doctor C was built on a curious kind of openness and trust. As he described, before his surgery the doctor assured him that the surgery was necessary if he wanted to run again, something that showed him that Doctor C seemed to have his best interests in mind.

The first thing he said to me was, “O K, I’m gonna tell you what I think you should do. I understand running is important. This is what it is. I’m positive on it.” He brings a book out and shows me in the book what it is, and he says, “Now, this is what we can do. I want to let you know up front though that I’ve already got my house, my boat, my cars. I don’t need the money. You don’t have to have surgery, but this is going to continue to bother you. If you want it fixed right and you want to continue to run, then we need to do this.” From that day, we had the best relationship.

This quote also demonstrates Doctor C’s attempt (pretentious comments about financial matters aside) to democratize the healing process by sharing as much information about Tyler’s injury and the procedure as possible. As Franks (1998) points out, this is something that is too often absent in medical patients’ narratives, and after Tyler fully

recovered from this injury, Doctor C even asked him to test-drive a number of the latest rehabilitative technologies

However, while Tyler credits Doctor C for his “holistic” approach and his emphasis on positive mental attitude, some might argue that the relationship is still purely instrumental in intent and effect. It is true, after all, that Tyler rejected the advice of several doctors before Doctor C gave him the answer he wanted. From his perspective, though, his relationship with Doctor C was not about the performance ethos and a complicit medical community, but about his love for his sport and a healing process that went beyond merely employing technology to heal his injury. As he stated,

He [Doctor C] realized that for me to completely heal the way I should heal, it was going to take more than technology, and that’s kind of what was unique about him. He realized that this is an attitude that you’ve got to have. No doubt that they used technology as far as the x-rays and as far as the surgery goes, but it was the attitude thing.

Thus, despite what we may think of Tyler’s judgement for ignoring the advice of numerous doctors, and despite what we might think of Doctor C, Tyler’s experience was, ultimately, a positive one. He came out healthy, able to do what he loves, and more knowledgeable about his body. He may be a “mortal engine” (Hoberman, 1992), but he is also, without question, his own head mechanic.

Firing the booster rockets: A story of progressive technologization

Tyler is aware that his progression as a runner is intimately tied to his level of engagement with technology, but before the cyborgification process can begin in earnest, he feels that he must completely exhaust his body’s “natural” capabilities. While he later

added that to even use the phrase “natural ability” is to place limits on himself, the following exchange provides insight into Tyler’s view of self-technologization

Ted: You’ve talked about a lot of things you *have* done, and you’ve talked about how important performing well is. Is there anything that you *wouldn’t* use?

Tyler: Probably not. I’ve gone by the philosophy that as long as I’m improving. If it’s not broke then don’t fix it. As long as I’m improving, there’s no reason to try anything new, but if I don’t feel like I’m improving like I should be, that’s when I think you have to max out your body’s own potential before you aid too much, because then I think your body can become dependent or you mess up your own natural ability. Definitely the things that technology has brought about, like studies on high-low altitude training, VO2 max tests, EPO, whatever it is creatine. I don’t think I would be opposed to using them, but I would be before I felt like I had maxed out my own potential. I think I would completely max that out prior to doing so, because I think that you have to do that. That’s the only way. In other words, to get the maximum benefit, you want to get all the benefits you can out of your body first to get to a certain point. Then, you advance it even further with proven techniques. If you overlap those two, you might be cutting short what the advances could do for you. Because then you’ve overlapped the maximization of your own abilities with the advances of technology.

His “booster rocket” strategy would progress from things that he feels are more “natural” to things that he considers more technological. Interestingly, even though he knows that using devices like heart monitors would be helpful, and has even experimented with using them for a brief period, because he does not feel that he has reached the limits of his “natural” self, there is not yet a need to use them regularly. He admits to the financial pressures of elite track and the need, more pressing than ever now with the arrival of a child, to support his family, but the performance ethos has not swayed his sense of steady progression.

The first change Tyler would make is to begin practicing what is known as high-low training, which he describes as “legalized blood doping.” Scientists have known for decades that training at high altitudes boosts the body’s red blood cell count, which in

turn increases the athlete's oxygen-carrying ability. The problem with consistent high altitude training is that it is impossible to train at the same speed and intensity in harder workouts. So, scientists have recently discovered that runners' red cell counts increase simply from living at altitude, and that when this is combined with going down to as close to sea level as possible to train, substantial benefits in fitness occur.

Given his initial characterization of high-low training as "legalized blood doping," I was curious about the difference between this sort of training and various self technologies designed to produce essentially the same effect—an increased hematocrit level that allows more oxygen to move through the system.

Ted: What's the difference between doing high-low training and doing it by another means like blood doping?

Tyler: It's legal for one. I would never want to do anything illegal, and blood doping's illegal. Another top runner [Phil] and I have talked a lot of times about, if there weren't any standards what all there would be. People would be on all kinds of stuff.

His response shows just how tenuous the belief in a supposedly untainted athletic body is for many elite athletes. While he first reasserts that he would never do anything that was illegal, his response indicates that the level of technologization of he and his competitors is held in check mainly by rules and regulations. He elaborated at length on how he feels about the concepts "natural" and "artificial."

Well, it's legal or illegal. I think a natural athlete is just someone who goes out and works hard and trains with the means available to them. It can be any amount—just whatever resources they have, whether it's everything from a sport psychologist to a nutritionist, to someone who just has a mom and pop—whatever's on the table is on the table. Whatever means are there, then so be it. When I think of artificial, I think of somebody that trains in a lab all day. They've had extensive blood tests. I think of illegal stuff, really. To this point, they're doing everything these days, and I do see anything illegal as being artificial, because that's just enhancements, drugs and other than natural things.

Because he defined “natural” and artificial” along legal lines, I asked him to comment further on a scenario in which the current restrictions were lifted. What if the Olympic movement decided to surrender to the prospect of openly cyborgified Games? The following quote again demonstrates Tyler’s internal conflict over how he constructs the boundaries between “natural” and unnatural,” “self” and “other.”

Ted: You mentioned that you and Phil talked about what would happen Can you expand on what it would mean if everything was legal?

Tyler: I think, honestly, it would change my perspective I think I would have a different perspective as far as talking about how I want to maximize what I have first, and then advance from there I think it would have been introduced to me a long time ago There’s no telling, I mean EPO, blood doping. there’s tons of stuff out there that fortunately I don’t even know about So, whether it’s steroids or whatever. I think that I have no doubt that I would have taken something already, just because it would be a norm

While I initially found it surprising that Tyler included EPO among the technologies that he might someday use to improve performance, after reviewing the transcripts he reiterated that he would only seek out technological innovations that are legal, such as new training methods and equipment or nutritional supplements In fact, the conflict that seemed evident in our initial discussions was later replaced by a strong desire to establish ownership for his athletic accomplishments and assert his status as a “clean” competitor. Yes, he admits, there are enormous pressures to perform, but to rely on currently illegal means of doing so would be to tarnish himself and his sport The following quote shows his final rationale for steering clear of EPO and other illegal self technologies

It all boils down to you, though You have to be able to sleep with yourself at night That’s the thing I’m going to do whatever it takes to be the best, so long as I can sleep with myself at night Being able to look at myself in the mirror and know that I did what I was supposed to I stayed within the rules, and knowing that I had *this* much success and I know it was me that did it, rather than I had *this* much success and then I did *this*. I don’t know if it was the EPO I was taking, or how much did it really help?

Was it me or was it the drug or whatever? You don't want that tainted kind of accomplishment, you know

His assertion that he did what he was supposed to do indicates a lack of agency and autonomy as well, and a sense that, regardless of what he considers "natural" and "artificial," the definitions of these terms and the legal issues that surround them are controlled by others. He is a cyborg in the midst of an identity crisis of self-technologization, a conflicted posthuman. While Pronger (1998) calls for athletes to openly and joyfully transgress the boundary projects of elite sport, Tyler seems to feel guilty at the prospect of even wanting to do so, and admits that a victory with the aid of illegal substances or practices would be tainted. Interpreted another way, however, it is also possible that Tyler's sense of what is fair and morally and ethically acceptable is simply consistent with the standards of the drug testers and bureaucracy. As he put it, "My reputation comes at a cost, which is the inability to do anything to damage it. Once it has been kinked it is never straight again." Indeed, once any track athlete tests positive there is little he or she can do to change the public's, and perhaps more importantly their peers', perceptions of them. Nevertheless, his comments clearly show that he has at least a vague understanding of the socially constructed and historically contingent nature of "human," as well as the boundaries between "natural" and "artificial." Thus, Tyler will continue to technologize himself in the future, particularly when he feels that his performance is at a plateau, and as the previous quote suggests, he mentions high-low training as the first training procedure he will engage in. He still finds value in the effort of a grueling training program, and has no desire to take any sort of magic pill that would enhance performance without practicing.

As a final note, while Tyler obviously knows what currently banned or illegal technologies are available, he is unaware of how he would go about technologizing himself in this way, even if he wanted to. He also added that, "I do not run to be the best in any sport but to be the absolute, without a shadow of a doubt, the best I can be."

While it is only speculation, perhaps the only reason why Tyler hasn't been exposed is because he has yet to make an Olympic team and become introduced to that most elite of subcultures. In fact, Phil, a two-time Olympian distance runner who has trained with Tyler, described exactly how he would go about procuring any number of different self technologies, specifically those designed to boost hematacrit level, from local physicians. "After lunch," he said, "I could go right now and talk to this guy and we could determine how much I would need to get me performing better but monitor it so that it wouldn't be dangerous."

Over the counter technology: Fairness and access

Tyler also expressed his view on fairness as it relates to access to technology, and he drew an interesting, if not altogether clear, analogy to lettuce. While some lettuce may be grown using chemicals and perhaps even genetically engineered, the key factor is accessibility. Since he can go into any store and buy either the organic or more technologically enhanced produce then there is no issue to discuss. What would be problematic, according to him, is if some people had access to a "super salad" that was not only grown in a lab, but available only to certain segments of the population. Applied to sport, Tyler believes that certain technologies are available to everyone, or at least those that can afford them. When his notion of fairness is compromised is when his

competitors have access to a technology that he does not. This relates directly to his frustration with the testing procedures in the U S and other nations. EPO may be something he considers, at present anyway, illegal and “unnatural,” and for these reasons he would not take it. It may seem ridiculous, but what bothers our protagonist is the fact that, if he did want that “super salad,” he would have to risk banishment from his sport, while others (in his assessment) are able to eat all of this magical produce they wish. Such is the mindset of an American track and field athlete. This said, he also seems to overlook the possibility that, from a financial perspective, he may have access to things that others do not as well! Consider the following comment on vitamin supplements:

Right now I’m trying some new vitamins. I used to just take straight over the counter – well they’re still over the counter – but not the garden variety, go to Wal-Mart and buy some Centrum, B-12, Beta-Carotene. I take some magnesium sulfate for cartilage and bone deterioration because of the pounding. I still take them, but instead of just taking the old generic vitamins, I’m trying these more high potent vitamins, and they supposedly have different ingredients in them as well to make your body absorb well.

Tyler commented further on the question of fairness. I asked him whether he thought it was fair that another runner might have to use his “booster rockets” sooner than he did because he had less innate (i.e. genetic) talent. His answer is an attempt to relate fairness not to things that are out of human control, but to personal choice.

You cannot control how much talent you have been given. What you can control however is what you do with what you have and how willing you are to do a bit more to make you better.”

This makes sense, but as he continued to elaborate on this point his explanation became less convincing.

Our talent doesn’t separate us from one another or make one person better than another. It simply makes each person different in another way. The focus should be

on ourselves and the goals we set for ourselves. In this freedom to do this, we are all capable. Therefore this is fair.”

Being “different in another way” is fine unless, of course, the way that happens to count is one’s ability to excel in the 3,000-meter steeplechase. I wondered, because of his strong belief in “natural” ability, what he thought of the fact that some athletes may be in need of technology sooner rather than later. Is it fair that he has gone this far in his career without tapping into the technological reserves at his disposal while one of his competitors has already exhausted his? He responded that natural ability isn’t fair, but that people can control how they take advantage of what ability they do have and work with technology to improve performance. In a sense, Tyler seems to know that natural (i.e. genetic) ability is no longer all-important in the new era of cyborg, because, as he points out, even the most gifted athlete who fails to use technology can be beaten by lesser talented athletes who use technology to advance.

Future horizons

Our discussions of technology prompted Tyler to talk about the future of his event. He sees the future of the steeplechase as virtually unlimited, and points to technique improvements among African runners as the place where new standards may be set. From the results of recent international meets, this seems to be the scenario already, although it is certainly possible that there is something about the way Kenyans steeple that is uniquely Kenyan. In other words, the practice of using videotape analysis to help improve technique over the barriers is associated with a particular ethos which Tyler subscribes to, but which others, for any number of reasons, may not.

His stance towards technological innovation in his sport is, overall, a positive one As he summarizes it

It's hard for me to say there's too much technology because I welcome most of it I think it's definitely an advantage There's a lot to be said for technological advances in all aspects of life, including running I'm always open to new ideas and new things

In the following exchange, however, Tyler voices his concern over taking technologization, particularly with respect to the athlete's body, to such a degree that athletes are no longer recognizably human As one might expect, given his true excitement when talking about technology, he does see the potential for those who would partake in contests between participants with mechanized bodies, or machines with more human characteristics But while such boundary transgressions are acceptable, they are not to be confused with track and field To cyborgify one's self to extreme levels would be to re-skill one's self for a completely different sort of competition

Ted: How far would you like to see it [the use of technology in track] go?

Tyler: I don't know. I definitely don't think you take the human side out of. I mean, no mechanical legs or anything. That's not human You talk about things being equal, that's definitely not equal There's no limit to how fast times could be when you talk about then we're turning it into short track auto racing or whatever! It's just a matter of having a head on a pair of metal legs Who can drive their legs the quickest. If you want to do that, that's another sport, but I don't think it'll ever get to that I think that if something like that comes out, then it will be another sport I think that there's been too much tradition from Greece and the basic Olympics that it will always stay It will always be forever and ever. It's the same thing like the X games are to the regular games now These are sports that are popular now that are totally different and I think if stuff comes out like that, then it'll be another type of Games

As he elaborates on these "totally different" competitions, he explains why he thinks technology will never lead to the disintegration of track and field, and in the process realizes an ironic twist in the efforts to maintain the sport's present level of cyborgification

There's too many rules, IAAF, USTAF, and all the organizations they put too much emphasis on, "This millimeter of a disc, this equals that, you can't do this . " The rule book is getting thicker and thicker every year That's their attempts to keep it as traditional as possible, and I think that as long as they continue to do that if anything, it's getting more away from the tradition because it's being more technological from the aspect of trying to keep it away from being more technological! In the old days you'd just show up with your javelin and throw it Now it's weigh it, measure it, do the diameter, how big is the handle

Epilogue

Tyler ended his lengthy response to his interview transcript by writing that he is truly trying to "find more balance" in his life, and the future arrival this fall of his first child will, he assured me, add to this growing sense of perspective Of his life and part-time occupation as a professional runner, Tyler says that, "There is nothing worse than being sentenced to a life, bound to a job that you don't enjoy and even worse feeling like you don't have the choice to change it " So, does he feel he has the power to help change track and field and the rules regarding the use and restriction of technology that, as we have seen, he knows he has little say in creating?

Ted: How much of a say do you think you have in helping define what your sport is?
Tyler: Right now I don't think I have too much emphasis I think that the more that I achieve, the more you're looked at for advice and influence from the rulemakers of the sport That doesn't mean that I could do anything There's lots of ways to make an impact, but on a major level I think it would be better to be a successful athlete and then just say what you think

As a first-time Olympian, perhaps he will find his voice sooner than he might have thought Whether he thanks technology or says "No thank-you" to it, at least then he will be part of the process

IV. Loretta

Introduction

Most children run. They run carefree through backyards, fields, urban sprawls, and wherever else their limbs will carry them. Then there are children, a select few, who run with intent, with a goal, endlessly searching for the next finish line. Loretta is one of these children, and to understand her life story of technologization we must first close our eyes and picture a crowd of midwestern adults, eyebrows raised, watching a tiny pair of feet overtaking an equally surprised adult dressed up as a Disney character. Let me explain. When I asked her to talk about her childhood, Loretta began by recounting a story of her first race at age five, when a fun run through the local metropolitan mall was transformed into an embarrassment for Mickey Mouse. As she explained, “You had to chase Mickey Mouse, and I caught him and you weren’t supposed to catch Mickey Mouse because it was like a kids’ race. I totally won and kicked everyone’s butt and got a T-shirt.” I begin Loretta’s narrative with a short glimpse back to her first race because, as you will hopefully recognize throughout the pages that follow, her most figural interactions with technology have involved running.

Beginnings

While many Americans spend their whole lives trying to move from the city to the supposed tranquility, some might say monotony, of the suburbs, Loretta began with the latter and moved towards the urban sprawl. Born in the South, her family moved to a large Midwestern city when she was two, and she lived with her father in a cul-de-sac development adjacent to a metro park, one of several city-owned green spaces that

traverse through the city Her earliest runs were through the hundreds of miles of park trails that connected with the zoo nearer to downtown, and the enormity of the park system allowed her to run a new route almost everyday, something she loved throughout her childhood and adolescence Her father remarried when she was in second grade, and the family moved into the city just minutes from downtown to be closer to her stepmom's job at the offices of a major petroleum company Soon after moving into the city her sister was born, and they still remain close, or as close as two sisters corresponding mostly via through e-mail can Their new neighborhood was still close enough to the parks system to run on the trails, and she had the opportunity to interact with diverse groups of people that were absent from her Catholic school. In retrospect, she admits that while the suburban lifestyle was something she wanted when she was younger, she remains nostalgic about her childhood environment, and still drops by to say hello to the man in the corner store--a touch of humanism in the big city

Her house, which her parents still live in, is an early-20th century ranch with all the standard technological comforts of early 21st century America, from microwaves to washers and dryers to televisions and stereos Her backyard has a rustic feel, but it still retains several distinctive artifacts of modernity Some of her fondest memories, for instance, involve playing basketball while her parents worked in the garden and cleaned their small goldfish pond

The focal point of Loretta's home was the kitchen, where her stepmom cooked and where the family would commune before meals This practice has declined recently, however, and her house has been "overrun" with computers She was introduced to

computers at a young age because her dad's real estate job allowed him to work at home, and along with various games she became a skilled typist as well. She also pointed to things like audiocassette recorders as examples of technologies that fascinated her at an early age, but admitted that most of her spare time was occupied by outdoor activities and her running. In short, her childhood was spent, almost exclusively, unplugged, something that may have contributed, in part, to her lack of any substantive comments on larger societal technologies.

General thoughts

When I asked what she liked about running, the first thing she mentioned was her first pair of shoes. We shared a similar entree into the subculture of running shoes, having both purchased our first pair of Brooks by the end of fourth grade, although she made a point of the fact that she purchased them in a specialty store rather than Sears (where I bought mine). Her experience of buying her first pair of racing spikes also stood out in her memory, as the following quote illustrates:

My first pair of spikes was in seventh grade. They rocked. They were Reebok. My next pair in eighth grade we weren't allowed to wear spikes in CC, so I didn't ever. I had the matching shoes that matched my spikes, and the T-shirt. Everything matched. They were Asics and they were those royal blue with the hot pink.

That she mentioned the aesthetics of her shoes and uniform is not a coincidence, and as Holt (1998) points out, the look of equipment technologies in track and field plays as great a role in their long term success as their function. Further, Kramarae (1988) suggests that one way that women, in general, experience technologies differently from men is in their response to the aesthetics of even the most mundane technologies (e.g. household appliances).

Even with a moderate training regimen she won her city championship meet three years in a row in middle school, and extended this success into high school, where she was all-state several times in both track and cross-country. Because of her accomplishments, she was selected to attend an elite high school girls' running camp at the Olympic Training Center in Colorado Springs, and while there she was exposed for the first time to the whole gamut of sport technologies available to America's best athletes.

When I asked her what came to mind when she thought about technology in her event, she did not mention nutritional supplements or prosthetics or any of the devices she saw in Colorado Springs, but something fairly obvious--track surfaces. To quote Loretta, "When I think of technology, I think of different tracks. Obviously a cinder track..we had a meet on cinder track in high school and it was awful." I cannot deny that cinder tracks are awful, for one of the most memorable (and humorous in a warped way) episodes of my sophomore year in high school was when a teammate fell during practice and had cinders embedded in his skin for days. As the following sections will reveal, however, Loretta's initial response is far from a thorough portrait of the numerous times throughout her athletic life when she embraced, and on occasions resisted, various forms of technology and means of self-technologization.

Measuring progress: To digitize the details?

Aside from her independence and competitiveness, perhaps the most prominent aspect of Loretta's personality is her organization. She is not just orderly, but admittedly obsessive-compulsive, a characteristic she jokingly attributes to a time when her father

made her write, "I must pay attention to detail," 100 times when she was ten years old. Indeed, whatever the origins, it surely relates to her immense running log, in which she meticulously records all of her races, workouts, and other assorted information. There are several computer programs available that can help runners quickly and efficiently record their times and distances, keep track of their mileage, and even plot their progress graphically. This would be technological overkill for Loretta, however, and the obvious meaning that her jumbled log has for her struck me as almost a kind of focal practice in itself. To take the time writing out her workouts and thoughts and feelings about her running *by hand* was one way that she resists what Borgmann (1984) calls the "frivolous" nature of many modern technologies. While not a true focal practice, perhaps, in that writing in her journal is a solitary task, it nevertheless reinforces a sense of personal accomplishment and connection with her training. I wanted to take a peek inside the bulky mass of papers that strained beyond the notebook's borders, but Loretta informed me that the log had grown to incorporate many personal items and thoughts. Note to self: Even cyborgs need some privacy.

Her attention to detail transferred over into her approach to training, as well, and she became more concerned with precisely measuring and timing her daily workouts. As she explained:

I had to stop it for a minute until it was exactly where theirs was and then started it again. Megan was like, "Why do you have to do that? you're so anal." I thought about it and I'm like, "You know, when I get home that one minute when I write in my log 45 minutes, no matter what my watch says I will have covered the same distance, but it had to be exactly right."

While her detailed recording of each workout is not technological, per se, it relates to what Guttman (1977) saw as symptomatic of the move from a qualitative to a more precise and quantitative approach to training and competition. Further, as Eichberg (1986) might have predicted, Loretta's attention to detail, which she admits seems absurd to others, necessitates the procurement of more technologically advanced measurement devices (i.e. running watches) so that she can keep better track of her time. As well, Loretta is drawn into an even more intimate relationship with her watch, because she must now attend to it at every intersection! Detail leads to measurement leads to innovations needed to accommodate such measurement.

I sing the body electric? The disciplining of the cyborg-feminine body

Loretta's identity is also informed by the collision between technology and her body. While she said that she was never really aware of her body and the technologies that shaped it, the stories she told reveal a pride in her corporeality and a preoccupation with other female runners' bodies that she categorizes (though not maliciously) into two general categories: skinny and fat. Loretta is neither a classic ectomorph, the waifish athlete who looks like even the slightest headwind might bend her ninety degrees backwards, nor is she a classic mesomorph in the style of Jarmila Kratochvilova, a heavily muscled, former Czech 800-meter champion. Nevertheless, her identity is intimately connected with her musculature that, while not massive, certainly exceeds that of most runners she competes against. As she put it:

I was just a little muscle when I popped of the womb. I've always been real muscular and fit. There's pictures of me when I was 2 years old standing at the top of the stairs and you can see my guns. Now everybody says, "Look at your muscles. How do I get muscles like that?" I don't do anything in the weight room more than most people do.

She has never had what she would label an eating disorder, and has never used any kind of pills to control her weight or diet. Like many female distance runners, however, she has been subject to disciplinary technologies of overall weight management. In fact, one of the most insidious disciplinary mechanisms in elite sport is the policing of weight among female athletes, including distance runners (Shogan, 1999). Technology in this sense involves a strictly monitored diet and an acute awareness of bodytype.

Chapman (1997) used a Foucauldian framework to analyze what she calls “technologies of the self,” or the processes by which female athletes, rowers in her study, construct their sense of selves within the context of a culture obsessed with making a certain weight. As she states, “An ultimate effect of the technology of weight control is women’s disempowerment” (Chapman, 1997, p. 207). Within the track world, conventional (not to mention patriarchal) standards have generally dictated that “thinner is better” for women runners. After all, that extra pound could cost you the race! Duncan (1994) adds that even portrayals of women in magazines and other entertainment outlets contribute to a panopticon of bodytype and weight among women distance runners, who are not only monitored by external disciplinary forces (e.g. coaches and other athletes), but by themselves as well. Aside from these theoretical uses of the term ‘technology,’ technological devices are implicated here as well, because Loretta and her teammates were subjected to regular bodyfat measurements using various testing equipment.

For Loretta, it was difficult at first to make sense of her bodytype and aggressive running style on one hand, and the accepted feminine distance running ideal of the stick-

thin competitor on the other. As she put it, "When I came to this university, so many girls I know dealt with that [eating and weight issues] That was hard my freshman year trying to reconcile healthy eating and knowing that just because they don't eat that it's ok for me to eat " While techno-body altering procedures like electrolysis and cosmetic surgery have become a multi-billion dollar business, Loretta's experience and awareness of her body eventually improved, in part by turning the dominant morphological ideal on its head Though she described several of her teammates as struggling with eating disorders, Loretta's reconciliation with the ectomorphic body and her own was aided by words of encouragement from a well-meaning coach As she explains:

He always used to tell me, "You're not a wimpy, anorexic chick! You're strong! You're tough!" He'd always tell me that I'm just different I'm not fat but I'm strong and healthy That's one of my strengths--my strength

While we might well question the coach's method of delivery (anorexia is an illness that has nothing to do with "wimpiness"), Loretta maintains that she was empowered by the newfound connection between her bodytype and running style Her corporeal identity grew to transcend oppressive patriarchal constructions that labeled muscular as fat and thin as weak (though, ironically, necessary for optimal performance) through the reframing of herself as a strong woman whose skill as a runner is intimately tied to her physical and philosophical denial of the dominant view of women runners' bodies

Loretta also talked about other technologies that relate to her sense of embodiment as a woman athlete Her best experiences of equipment technologies are those that occur when she remains largely unconscious of their presence Her response to my questions regarding how she experiences her body in relationship to her shoes and uniform lends

support to Holt's (1998) claim that the aim of equipment technology is to facilitate a phenomenological union between it and the wearer. As she states, "I don't like to worry about that stuff. My equipment should be comfortable to a point that they're an extension of me, just part of me, and not something extra." Given this position, it is understandable that, while she is largely unable to describe experiences when she has felt a oneness with her equipment, Loretta readily recounts times when her body has felt completely separate from it. She has, for instance, had negative experiences with technologies designed to help buffer her body from the elements, and one episode stood out as an example of the awkwardness that occurs when a rift forms between the human-technology interface.

I don't know if you'd consider this technology or not, but that Mideast meet was freezing and snowing and I never wore tights. I hated to run in tights. I would wear gloves and long sleeve shirts under my singlet but not tights. I felt like .I liked to just be natural and not have anything on me. I froze to death. I ran awful. So the next week or two weeks or whatever at Foot Locker, I wore these black tights and the waist was so tight that I could not breathe the whole time! I ran awful again and the sun came out and it wasn't even really that cold so I probably shouldn't have even worn them. So I've never run in tights again.

Despite sport designers' best efforts to create form-fitting apparel that helps streamline runners' bodies and reduce wind drag, Loretta stated that she feels restricted, almost suffocated, by clothing that clings to her skin. Even as far back as her sophomore year in high school, an untested jogbra inhibited her breathing during a race, and from then on she began cutting the liners out of her uniforms and even stretching out her new singlets. High-tech fabrics are meant to be experienced as an extension of the skin, but for Loretta they were ultimately an uncomfortable distraction.

Rehab technologies and the pressure to perform

Loretta's running career was injury-free in high school, so although her school had exceptional training room facilities she used them only for preventative purposes. Early in her college career she developed several minor problems, including peroneal tendonitis, and she immediately began treatment at the university's first-rate training room. All did not go smoothly, however, and her story of rehabilitation is one that is characterized by the faulty and misguided use of technology and the pressure to employ any and all technologies to facilitate the healing process as quickly as possible, often with little regard for the consequences. In fact, she still harbors a great deal of anger towards those involved in a system that she felt put her long-term health at risk.

As fascinating as all the buttons and dials are, and as simple as they are to operate, rehabilitative technologies are not toys. Loretta fully understood this, but some of the less experienced trainers obviously forgot, and in a disturbing training room faux pas her foot was once burned when a trainer left the ultrasound applicator in one place for too long. She remained fairly healthy during her first outdoor seasons, and even made the conference finals. Her string of injuries resumed again the next year, though, and while she was able to train, she had significant technological help. For example, before one outstanding performance on the west coast she took *eight* Advil to dull the pain. As she recalled, "All through that season I was taking it like it was going out of style. By conference they had put me on some stronger stuff called Lodiene." That she took increasing dosages and strengths of pain medicine to allow her to continue running is not surprising, and as she described this experience I smiled, remembering a time when I

practiced a similar method of pain management. What is alarming is that she was ingesting substances on the advice of her trainers even though they were obviously aware of the extent of her injuries. This abuse of self-technologies speaks to a larger issue that relates to what Coakley (1998) calls "positive deviance." Positive deviance refers to the practice of engaging in unhealthy behaviors or habits that, within the context of sport, are not just condoned but supported. While Loretta obviously recognizes now that taking massive amounts of pain-medication is unhealthy, her ability to "gut it out" and perform with the help of technology represents a frightening illustration of how technology can be used to, in effect, deceive the body for purely instrumental (i.e. to perform) reasons.

Loretta also talked at length about her most serious injury, plantar fasciitis, and how she managed to overcome both the injury and others' perceptions that her running career was over. One treatment for plantar fasciitis is the use of cortisone injections. Cortisone is a steroid that relieves the pain, but its long term effects include a weakening of the tissue before it begins to rebuild and strengthen, and so there is always a risk that an athlete might employ this particular technological treatment and suffer permanent damage. Loretta also knew these risks, and although her coach and trainers encouraged her, she refused to get the shots.

As if the ongoing injury were not enough, she also felt as though the trainers who drove her to the foot specialist viewed her as a "whiner or hypochondriac." More importantly, she felt disempowered, and disconnected from her own body's healing process. In Loretta's eyes, the entire system was trying to send her out to pasture--a worn

out athlete incapable of surviving the rigors of elite-level training and competition Her anger at those involved and suspicion of their “expert” knowledge is apparent

In the long haul it [cortisone and the recommended treatment] wasn’t going to be good for you For them to say that I was 19 years old and that I was just breaking down I was like, “Bullshit, man! I’m 19 years old I’m not broken down and old That’s not possible ”

These negative experiences, combined with the long hours she spent daily in the training room itself, changed Loretta’s perspective towards rehabilitative technologies permanently Where she was once open to trying new procedures and devices and trusting of her coaches and doctors, she developed an aversion to all but the least advanced means of healing, and now relies mainly on ice, massage, and occasional chiropractic adjustments Like a sportive Little Abner, who generalized his fear of white rabbits to all white, fluffy objects, Loretta’s distrust spread to encompass the sports medicine profession and the entire system of intercollegiate athletics that she feels often places its own interests above the interests and safety of the athletes

The following quote shows how traumatic the episode truly was, and provides a glimpse at the way Loretta has come to negotiate her interfaces with technology.

To me, I came to dread going to the doctors to hear what they would say, because I didn’t want them to say, “You’re better Start running ” I wanted time to really heal myself and get back in shape and run the way I could run So, all that went down. In the summer of 1997 I started training again and I really just listened to myself. Since then I don’t think I’ve ever had treatment or anything done I go in there every day and they tape me up, I ice, I get massages I get everything that to me is more of a natural kind of a thing, not like hooking me up to something

For Loretta, the distinction between “natural” and “unnatural” is tied to a perception of the boundaries between her body and the technological “other ” “Unnatural” technologies involve anything that requires being plugged into an outlet or hooked up to

any sort of equipment, as well as various self technologies that are not native to her body. Hence, along with electric stim and ultrasound, she considers steroids, EPO, and any other type of banned performance-enhancing substance as off limits as well, especially if it must be injected--needles add to the "otherness." Logically, she views massage and chiropractic adjustments as natural also because nothing external is added to her body's biochemical makeup.

Yet, she frequently ingests a number of substances that do not occur naturally in her body. For example, what are we to make of her allergy shots and inhalers? How about Advil? To Loretta, the response to these questions is one of necessity. As she states, some practices and substances are not what she considers "natural," but without some degree of employment of the "unnatural" she would be unable to compete at all. Thus, she does not view them as performance-enhancing, per se, but as a part of her athletic identity.

I know my shots and inhaler. I wouldn't consider that really natural but that's unavoidable. I have to do that. I've seen what happens to myself when I'm not taking that medication for allergies. However, any kind of having to take Advil or anything just to be able to go out and run I don't think is natural.

As the last phrase in the preceding quote suggests, Loretta also makes an interesting distinction between her athletic and non-athletic lives that indicates competing standards of self-technologization. While she admits taking ibuprofen every couple of months to help with occasional pain and inflammation related to running, she believes that taking the same substance for a headache or other ailments not related to running is somehow separate. She elaborated on this idea throughout our interview, and it was clear that the same technologies that contributed to the creation of a less "natural" athletic body were

perfectly acceptable if their ingestion was not primarily aimed at improving performance or helping her to completely block out chronic pain

After mentioning her use of allergy medication, she went on to tell the story of how she began taking it several years ago. During her sophomore year in high school, she failed to improve on her previous performances after she developed serious allergies. She originally thought she had some kind of heart and lung problem, and went through a series of tests at the cardiopulmonary specialist. After it was determined that it was, indeed, allergies, she was put on inhalers and a medication called Seldane. She was taken off Seldane her junior year, however, following its removal from the market over safety concerns, and while her performances remained stagnant on that medication, she improved 22 seconds in the mile the very next week. While there is no medical evidence of a correlation between these two events (In fact, I would have thought the opposite would have occurred), she remains convinced that this was the case, and it was this alarming experience with self technologies that, even before she entered college, instigated the formation of a more critical stance towards various substances and other self technologies.

She continues to get her shots and take inhalers, and as if to further justify these “unnatural” acts, she reminded me of a memorable big race in which a top American woman runner performed extremely poorly because she had not taken her allergy medication. The following quote reinforces the notion of an athletic and “normal” identity, and that her athletic identity necessitates even her minimal forms of self-technologization.

If I was a normal person allergies wouldn't be a big deal. It doesn't affect your performance to have a little chest cold or sinus cold if you're in another sport, but as a runner it's a huge difference.

One final self technology that Loretta sees as "unnatural" but necessary is the birth control pill, which she has taken for about four years. If, as some have argued (see Davis-Floyd & Dumit, 1998), the birthing process has been cyborgified as much as any other aspect of women's lives, then the process of preventing conception through the use of the pill must be considered an important cyborg technology for women athletes. In fact, the use of birth control pills has been found to disrupt the tests used to determine whether athletes are using substances to boost testosterone production (Kammerer, 2000).

Using her own definition, a substance like the pill that is introduced into the body and obstructs a complex physiological process (i.e. pregnancy) must be labeled as "unnatural." Loretta certainly does not view the pill as a performance-enhancing drug. However, she does not see it solely as an effective form of birth control either, but rather birth control with the added benefit of allowing her to train with a minimal chance of becoming pregnant, something that would obviously jeopardize her chances of doing well at the Olympic trials. In addition, although she is aware that birth control pills may contribute to weight gain, she sees the alternative consequence for her running as far more unappealing. As she put it, "I know people who have come off it and gotten pregnant! I'd say that does more damage to your career than a couple pounds, ya know?" She also points to another side effect of taking the pill that could conceivably give her an edge over other competitors.

It's important and it keeps you regular. A lot of runners don't get their periods or it comes unexpectedly, whereas I know exactly which month I'll have it on, ya know?

She uses the term “medically necessary” to describe her rationale for ingesting or refusing self technologies, and she even passes on pre-menstrual medications designed to reduce discomfort and cramps. Thus, Loretta constructs the pill as necessary, as well as morally and ethically acceptable, and other medications as outside this realm. PMS medication, for instance, while not banned or seen as morally or ethically problematic, is nonetheless refused because it is not vital to her ability to train and compete.

Granola and Gu: You are what you eat

Loretta’s story of technology and embodiment is intimately tied to her diet. They say you can tell much about someone by looking into his or her medicine cabinet. The same can be said for examining one’s menu. Loretta’s diet and sense of what works for her nutritionally is a post-human culinary tale that parallels her technological identity. She is her own nutritional pit crew, carefully balancing an intake of completely synthesized substances and old-fashioned granola bars. Her obsession with detail carries over into her eating habits as well. She describes herself as having a good feel for her body’s nutritional needs, and not surprisingly she has yet to dispense with the childhood ritual (or superstition) of eating her pre-race grits.

Loretta talked about two specific technologized products that she “eats” regularly. Gu is like enhanced Jell-O for endurance athletes, and comes in single serving packets, the contents of which sort of slither, perhaps ooze is a better way to describe it, out into the athlete’s mouth. Equally as odd, as far as its consistency, is Jogmate, a high-protein pudding substance that comes in a tube. Both Gu and Jogmate look like the kind of things astronauts would eat with their bright orange Tang.

She also comments that, while her diet of cyborgized and 70s food might appear strange, philosophically if not nutritionally, she has simply found things that work for her. This attitude pokes a hole in the idea that the forces of instrumental and technological reason have completely enveloped elite sport, for there are enough synthesized and engineered supplements on the market now that Loretta could choose to eat only MetRx bars, Jogmate, and Gu at every sitting and wash it down with a vitamin-enhanced sports drink.

Conclusion

Despite a high level of access to technology throughout her life, Loretta has not succumbed to the technophilia of many American athletes. She realizes that some interfaces with modern technologies are beyond her control, especially where her allergies and asthma are concerned, but she sees opportunities to strategically resist any degree and form of cyborgification that she feels is both “unnatural” and unnecessary. With respect to rehabilitation, she even relies less on technology than she once did.

She also has an awareness of how her identity as a woman intersects with corporeality and technology, and her stories about feminine technologies counter the notion that technology is somehow “masculine” (Kramarae, 1988). She points out, correctly I think, that one thing technology and track have in common is that women’s impact on both of them has only been felt relatively recently. Reflecting on our interview, she later noted that, “The technology I talked about was more related to sport, rather than to a particular gender. And I’m not sure if I experience things dramatically different from a man.” To an extent this seems true, because while cyborg theory contends that our interactions with

technology are necessarily tied to gender, Loretta has trouble buying the notion that a rubberized track or videotape analysis are in any way gendered. It is also possible, however, that when she is engaging with those technologies she is less concerned with or aware of her own gender than she is with the task at hand. Further, there were a few instances, her story of her uniform and her discussion of weight issues, for instance, that suggest that at least some of her encounters with technology are inseparable from her female identity.

In short, Loretta's story is that of an imperfect, incomplete melding of the little girl who chased Mickey Mouse through a shopping mall and the East German women who dominated the middle distance events in the late 1970s and early 1980s. Her final summary of her technological identity gives the indication that, regardless of whether she continues to train for the next Olympics, she has found a comfortable equilibrium with respect to her evolving cyborg self.

I'm a good balance [technologically]. I'm not totally primitive, but I'm still in touch with what works naturally for me. I'm also not completely robotic or technological either, but I'm still into the latest and newest technology.

Postscript

Loretta would have been a long shot to make the Olympic team, but as a fan, more so than a researcher, I would have loved to see her motor through another two circuits of the track in Sacramento. A series of untimely injuries in the weeks leading up to the trials prevented her from even participating in the meet, but she is only 23 and realistically there is a strong possibility that she could make the 2004 team, or even the World Championship team next year. Even so, I can't help but wonder if she regrets not

reestablishing a more intense interface with the electronic and computerized rehabilitative technologies. Whatever the case, if she decides to focus on making an international team, don't count her out. She's one resilient cyborg.

V. Ron

Introduction

There are still areas of the United States where New York City crime statistics mean virtually nothing, and where talk of the "Silicon Valley" is met with shoulder shrugs rather than excited dialogue. Southwest Oregon is such a place, and the town of Acorn, population a little over 200, is quite secluded despite the major interstate that travels nearby. One forgets that many parts of America were once this covered with various sorts of trees and wildlife. Listening to Ron describe the rural area where he took his first steps towards self-technologization, steps that would ultimately lead to the 2000 Olympics, I wondered what percentage of Acorn's population remember Bruce Jenner more for his role in the television show "Chips" than for his world-record setting victory at the 1976 Montreal Games. Even the protagonist of this narrative had little sense of the history of his event.

I guess when I got better I followed Dan O'Brien and Dave Johnson and those people. I guess even to this day I still don't know a whole lot about the history. I guess a fair amount, but not like some decathletes who know every little detail who's ever done it and scores and numbers. I don't like study it or anything like that.

Perhaps it is not surprising that the idiosyncrasies of famous Olympians are not an obsession in Ron's everyday life, even though he has come to view his event as his career. Acorn, Oregon was logging country, after all, and were he to don a flannel shirt

and begin swinging an axe (or nowadays a chainsaw), Ron might well pass for the Paul Bunyan type

He has no flannel, however, nor does he wield any sort of tree cutting device, but his ranking as America's best decathlete has, ironically, afforded him the opportunity to wield numerous implements and engage with many of the latest sport technologies. In fact, the decathlete has more equipment in his arsenal than any other track and field athlete, for he makes his living not on a single jump or throw or run, but on a grueling two-day, ten-event competition, the winner of which is not just a gold medallist, but "the world's greatest athlete."

Access minus interest: Ron's childhood and technology

While Ron describes the 80-acre lot where he grew up as farmland (even though they were not farmers), it seemed better classified as a compound of sorts. His family's property was partly wooded, with several dwellings of various sizes scattered about a large, relatively open space. Located at the center of this area lies the "big house," where family members and visitors gather for meals. The 3-story building has a large dining area and a game room in the back that features shuffleboard, table tennis, and a wrestling ring, the latter a memento from his grandfather's days as a professional grappler. He elaborates further on other activities he did growing up, and it is evident that he has an awareness of class privilege and the sorts of leisure items this provides.

We had a lot of land to ride motorcycles and stuff. Actually, I was pretty spoiled. We had like an indoor swimming pool so we did that in the summer, we rode a lot of motorcycles, we played some basketball, we had a huge trampoline. We had a weight room, pretty much everything. We had a satellite and TV, but I don't think we ever really had a stereo. We never really listened to music. We never had any video games or anything like that. We weren't allowed to play that. I was aware of that stuff. I had

one friend that we'd go to sometimes. He had a Nintendo and we'd stay up late playing that. I really enjoyed it, but my mom didn't care if I played it, but they didn't want me to get in the habit of just playing games all day so they would have never bought me one.

This kind of ambivalence towards his experiences with more technologically advanced games and practices would characterize his athletic life to some extent as well.

Out of Oregon: From mediocrity to the main stage

Ron began wrestling as a 98-pound freshman in high school, and by the time he graduated he was 6'3" and about 170-pounds. Because his school was so small, he was able to play nearly every sport at one time or another, but he finally settled on track his junior year. Although Acorn High had decent facilities on the whole, he describes the track as a sort of ghost town where equipment from past generations came to die.

For track it was terrible, like all the facilities were really bad. Most of the hurdles were broken, the high jump mats were worn out. There were weeds growing on the track. I had a pair of high jump spikes. That's about it. No, they weren't even high jump spikes, they were sprint spikes and I used them to jump.

Ron's performances gave no virtually indication of his future potential, and while he placed in the top five at the state meet in the high jump, long jump, and triple jump, he describes these efforts as "very mediocre." In fact, he received no scholarship offers from major universities. Knowing that he wanted to compete in college somehow, he enrolled in a junior college near the Division I school where his brother, an All Pac-10 decathlete himself, attended. Despite having never trained for the decathlon, Ron nearly broke the school record in his first meet, and after steadily improving throughout the season he won the Junior College Championships. In his first international competition later that summer, he also won the Junior Pan-Am Championships.

Because he had little success in high school, he never really had an “Olympic Dream,” but as he improved it was feedback from others that prompted him to reassess his goals. Speaking of his junior college coach, Ron says

I still remember one hard workout I had, and like I said our coach was a really good motivator. I think it was my second year and he was like, “You just stay healthy and keep working hard, and by your senior year in college you’ll be an NCAA All-American.”

This positive reinforcement opened Ron’s imagination and increased his sense of self-efficacy, which was important because most of the people he went to school with stayed in the area and worked in the lumber industry. There are always doors, but sometimes they are not that easy to see. His success continued throughout his sophomore season, and his best score that year would have qualified him for the NCAA Division I meet. Two years before he had been a “mediocre” field event athlete, and now he had scholarship offers from every big-time track and field program in the nation.

While he always expected to compete in college, it wasn’t until he transferred to a major southern university with a renowned decathlon coach that he began thinking about the possibility of becoming an Olympian. First, however, he would have to overcome a series of ill-timed injuries, and as we might suspect, technology can be implicated in all of his rehabilitation stories.

The show must go on: Injuries and rehabilitative technologies

Ron had a healthy childhood for somebody who was active in so many sports. He had one minor hip injury in high school, but his only other memorable experiences with doctors were the two times he broke his hand, and his yearly encounters with needles.

during physicals. The following admission is almost humorous when placed in contrast with the image that first comes to mind when I hear the term "cyborg decathlete."

The only thing I remember about doctors is when I was little getting a physical every year for sports and getting a few shots. I hate needles. I hate getting my blood taken. I think that about every time I've had my blood taken I've passed out. I remember one time I passed out just getting my finger pricked. The first time I had my blood taken here at this university I almost passed out. I was freaked out when I had my knee surgery because that's the first time I ever had to get an IV and all that.

Ron's views on performance-enhancing technologies will become apparent later, but it is obvious already that anything requiring an injection would never even be a consideration!

He had a very productive fall of training, only to pull his hamstring in the first outdoor meet the following spring. This was his first major injury, but he spent several hours a day in the training room and eventually qualified for the NCAA meet. Ron's story of rehabilitation illustrates the importance of access and the differences in the overall technological capabilities of elite NCAA Division I schools and other smaller and/or less sports-minded institutions.

Ted: Tell me about what rehab you did. You came from a JC. What were the facilities like there compared to here?

Ron: It's amazing how much stuff they have here. We had a training room at my junior college, but it was a cold whirlpool and maybe like one stim machine. We didn't have anything hardly. You'd go in there and tape ankles. That was about it. I come here and see the training room and I hoped I'd never have to use any of the equipment. Just the attention you get too. You know how it is. You ran here. Everybody else comes first, you know. Track and field is kind of way down on the list. It's a lot better now.

The preceding quote also suggests that Ron's access to, and engagements with, rehab technologies have been mediated by two other factors. First, he alludes to the idea that athletes in revenue producing sports are often afforded a higher level of care than other athletes. While this may not be entirely true, I agree with his assessment insofar as

football and basketball players did, in my experiences, seem to be a priority for the trainers. In fact, during my years as a Division I runner, my first interaction of any kind with the head trainer was when I sustained a career-ending foot injury. Second, Ron also admits that *he* has become a priority since becoming more successful. The message here seems relatively clear--in elite-level sport, an athlete's status is often directly related to his or her ability to employ certain types of technology. In short. The hotter the commodity, the better the technology.

In addition to his hamstring injury, Ron was experiencing severe tendonitis in his knee, and after the season he decided to have surgery. While he continued to rehab, it took far longer than expected for him to fully recover, and it was almost a whole year before he could run at full speed again. As is the case with most athletes, the injury made Ron extremely frustrated, especially because he had lost his first opportunity to show himself, his new team, and the nation what he could do in his event. He talked more in-depth about his injuries, and because he had mentioned that he used the internet to look up track-related information, I asked him if he used it during the healing process.

Ted: Did you go and try to find out more about your injuries?

Ron: My hamstring I didn't. I just went in there and did what they told me to do. With my knee, I spent hours and hours on the internet looking up stuff--supplements to take for tendonitis, what kinds (of supplements) or rehab things other people have used. When I was getting my surgery too, the doctors said it was kind of a 50-50 thing. He said, "We can either go in and clean it up and most likely the pain will go away, or it might swell and bother you, or you can try to let it heal on its own." It wasn't like I needed surgery, so I tried to get a lot of information on that and see if I really needed to get the surgery or not.

This quote illustrates Ron's attempt to take an active role in his healing process, and while he did end up having surgery, he did so knowing that it wasn't simply because a team of physicians told him to

He redshirted the entire next year, and did not compete in a decathlon until the following year, when he unexpectedly broke the NCAA record in his first meet. While his coach told me later that there was no speculation about the authenticity of Ron's performance, Ron himself admitted that it would have been understandable for some outside of his personal sphere to think that he had technologized himself in illegal ways. As he put it

Going from (previous total) to (new record) is pretty much unheard of, and I think that's because I had those two years of injuries. Everybody probably thought I was on steroids or something. Nobody could really comprehend making that kind of jump, but it was really a gradual process and injuries that kept me from doing that

Ron also told a fascinating story about a competition later that year that illustrates how integral a role rehabilitative technologies can play in an athlete's success. The highlight of the intercollegiate track and field season is the NCAA Championships, where individuals compete for All-American honors while attempting to contribute to their team's success by scoring as many points as possible. Ten points are awarded to the first place finisher in each event, all the way down to one point for eighth place, and for teams in the running for the overall title there is immense pressure on athletes to perform, regardless of obstacles they may have to overcome

Ron entered the 1999 NAAs as the favorite, having set the collegiate record earlier in the spring, and his team was counting on the points his victory would provide. The facilities in Boise, Idaho, where the meet was held, are first rate, but even the most

advanced surfaces and timing systems cannot predict the weather On this occasion, Mother Nature delivered a cold, rainy day to the decathletes, who were obliged to compete for two days in conditions that caused their finely-tuned bodies to tighten, cramp, and in Ron's case almost give out

Ten minutes before the opening event, the 100 meters, he felt something painful in his hamstring, and memories of previous hamstring pulls flooded his head "I couldn't believe this was happening that close to the meet," he said, "I'd been healthy all year!" He tried to refocus on positive thoughts, but admitted thinking that he was surely going to suffer a total pull when the gun went off Luckily, his leg loosened up slightly after 40 meters, and he was able to spend the next 30 minutes stretching and getting it iced and wrapped by the trainers He made it through the long jump, although he took only one attempt, and then the shot put. He got treatment at the meet site after almost every attempt, and one of his trainers obtained a prescription for pain-killers from another trainer The normally strictly controlled practice of the distribution of pharmaceuticals was, it seems, suspended in the interest of becoming the NCAA's greatest athlete I asked Ron to elaborate on what other sorts of treatment he received

Ted: What kind of treatment did they do?

Ron: They used this machine that puts medicine through your skin with pads It's not like a needle It looks like a stim machine with the pads, but the medicine on there is supposed to go through your skin A lot of icing and light massage too

Later that afternoon on his second high jump attempt, he set a new personal best, but came down awkwardly on his heel, bruising it badly As he described his preparation for the day's last event, the 400

So I was off to the training room before the 400 and I didn't think I was going to be

able to run it. I couldn't even touch my heel down. They ended up putting a heel pad on it and wrapping it all up. It took a while to get my spike on, and by that time I had no time to warm up because they were getting ready to start. I just got in the blocks and ran the 400 and it hurt the whole time. My time wasn't that good, but by that time my hamstring. it didn't go away but the heel hurt worse. After the first day normally you just take your time and cool down, shower, get something to eat and hang out before you go to bed. But after the first day I had to do a bunch of interviews and after that I went back and ate and spent like from 6 at night till 11 00 getting treatment on it-the heel and hamstring. That made it like a really long day.

While the pain did not subside much the following day, even after rigorous, almost nonstop treatment, the events that stressed his hamstring were behind him. When the 1500 meter run, the final event, was over, Ron had won his first NCAA title. As he lay on the track after the race absorbing the reality of his accomplishment, he opened his eyes to an extended hand. It was the hand of Olympic champion Dan O'Brien--the past reaching out to the future.

As Ron described how vital a role the trainers, doctors, incessant treatment and medical substances played in his ability to win the competition, another boundary in sport that struck me as increasingly blurry was that between athlete and patient, the fully-functioning competitor and the proverbial walking wounded. Without having the access to these technological resources, he would not have been able to finish the event, let alone win it. Thus, while he stood alone on the podium as his family cheered in the stands, the whole field of sports medicine and the chemicals still churning through his blood stream were taking their own discreet bow. Ron gets all the credit, but the process of cyborgification and intimate engagements with technology were, and continue to be, unspoken allies in his larger quest for an Olympic medal.

A dash of this and a dab of that

When Ron offered his general thoughts on technology in the decathlon, he expressed an appreciation for other sorts of technologies and their contribution to his success. In the following quote, for instance, he suggests that, given two athletes with similar talents, the one with access to various forms of technology will have a definite advantage.

All the little extra stuff helps so much. When you get to this level you need every little thing that can help you get better. Even some DI schools don't have all the technology in all the areas we have here. I think it shows. They might be just as good as far as like athletic ability, but they don't have the facilities and other things that go along with it.

When I asked him to talk more specifically about this notion, the first thing that came to mind was his use of movement technologies, specifically videotape analysis.

I guess when I think of technology in track and field I think about films. I never had that in high school, but we film all of the workouts and all of the meets. My coach and I spend hours and hours watching films and techniques. With ten events there's a lot of technique and trying to master all of them. Film is one way that helps a lot.

Indeed, videotape analysis has been used for performance-enhancement in decathletes for some time. In one interesting application, after no-heighting at the 1992 Olympic trials, Dan O'Brien's coach and sport psychologist had him watch the footage of his final miss *one hundred* times. While repeatedly viewing negative performances is not a standard procedure, O'Brien came back later that season to set the world record, and eventually won the gold medal in the 1996 Barcelona Games. I asked Ron to elaborate on his use of videotape.

We don't do it every day. We use it for the pole vault, the throws. We used to film our running. We got a filmer and in the track office we've got two VCRs and two big TVs. We usually watch them with the coach or you can go in there by yourself and watch them. You just go over technique and watch it over and over, using slow motion, pause it and go frame by frame. Our coach has tapes of Olympic decathletes and we

watch them and then ours to see what you're doing wrong and what you need to work on

Ron admits that the videotape analysis sessions with his coach have been incredibly helpful, but he also realizes that some of his competitors do not get as much out of it as he does.

Given his emphatic statements regarding the importance of technology to performance in the decathlon, and his extensive use of movement technologies, in particular, one would think that Ron would also be on top of the latest innovations in implement and self technologies. In truth, the opposite is more the case, and while he has a sense of what works for him, he seems barely cognizant, much less interested, in any of the specifics related to the technologies he does use.

Ted: So, from what you're saying, you're not as conscious of the specifics of the implements?

Ron: I guess decathletes if you ask a discus thrower they can tell you everything about it, or a javelin thrower can tell you everything about that. I know that there's certain discs I've used for a few years that I like, but I don't know what's different about it. With the javelin, there's different brands. There's like a 90-meter javelin and an 80-meter javelin. I have no idea what that is, but I know there's a headwind and a tailwind javelin you're supposed to use. It's the same thing with those too, though. I have a javelin that I like that works good for me, but I couldn't tell you which one it is really. I know they're expensive. They're like \$500 for a good quality one.

There is a saying among decathletes that, "Specialization can kill you." Indeed, spending too much time on one event detracts from the time available for others. From the preceding exchange it appears that Ron has no interest in specializing any time soon, and I got the feeling that he would pick up any implement someone handed him without much excitement or protest. As evidence of this, he admits that, while some athletes do

not like to share implements, especially the more pricey poles, he would gladly lend any of his "tools" to teammates or competitors

This resistance to specialization also applies to the technologies Ron employs to shape his body. While a certain amount of size and strength are called for in the throwing events, bulking up in excess can stifle performance in the high jump and 1500. Ron elaborates on the necessary balance in his training, and how it relates to his bodytype

Everybody always talks about Dan O'Brien being the ideal height and weight, but really there's a lot of different body types. Every event helps different guys. Me being tall helps more than not. It doesn't normally help with speed but it's good for all the throws and jumps. There's not a perfect build for it. There's guys who are short and stocky that are real good. That's a big part of the decathlon--finding that balance.

Though conscious of how bodytype relates to performance, Ron pays remarkably little attention to engagements with technology that affect his internal physiology. He takes nothing other than common vitamins and a nutritional supplement to maintain his caloric intake and provide enough energy to train for all of the events and maintain his strength and weight. He does not even take creatine, as many of his competitors do, and admits to ignoring nutrition almost altogether. His story is so far removed from Hoberman's (1992) portrait of elite athletes that it somehow seems inconceivable that this minimally cyborgified man recently won the U.S. Olympic Trials. To be sure, he has gained over twenty pounds since he transferred from junior college through an intensive weight training program. Yet, he has used little external self technologies to do so, and as the following quote shows, his interest in doing so has been minimal and sporadic.

I've been on different kinds of weight gainers that I just get through the weight room. Every now and then I'll have that protein kind of drink, but I don't really take that very much. I've never really been that big into it, just off and on. I take vitamins, and

I'm actually going to get this rapid recovery stuff. It's got a lot of calories and protein too I'll get some of that just to help with a little bit of energy for recovery

In an elite sport culture obsessed with finding the newest pill or powder that provides an extra edge, Ron is a walking anomaly But perhaps more than anything else he said during our interview, the following quote captures Ron's almost vacuous attitude when it comes to the cyborgification process

I talk to other athletes who are on supplements and they ask me what I'm taking. I'm like, "Nothing," you know? I guess that if I knew it would benefit me I would do it, but Just now I'm reading Bruce Jenner's book and he talks about the stuff that he was taking He said he was taking over 57 pills a day, different kinds of pills I guess sometimes I get on a kick and try and like make sure I'm taking all the vitamin C and all that stuff

That he mentions Jenner's incredible diet of various self technologies is ironic, especially because many in the track and field community believe that Jenner competed with the help of steroids Whether or not the former world record holder ingested illegal substances is speculation, of course, and perhaps it is enough to point to the seemingly outrageous amount of pills he took as an example of how extreme elite athletes can become in their pursuit of Olympic gold. When I asked Ron how far he would go to use technology to alter his body and enhance performance, it was no real surprise that he claimed that steroids and other illicit substances would never be an option

I would never take steroids, because it's illegal, but (also) because of what it does to your body Even if it was legal, I think I wouldn't take it As far as my body goes, though, I'm not like a health nut by any means

One thing that we can say about Ron, then, is that his resistance to the technological imperative is completely consistent! On one hand, he passes on any substance or practice

that he feels will *harm* his body, and on the other hand he certainly does not resort to any extraordinary measures in an effort to *aid* his body either

From the previous series of quotes, it might seem as though Ron is more than slightly naive with respect to the impact of illegal self technologies on his event. Towards the end of our last interview session, however, he expressed his thoughts on this very topic.

I don't want to be gullible and think that everybody's clean because I know there's athletes that aren't. I've heard stories, and I don't know if I believe them all, but I have a respect for the drug testing. I'm thinking that, even the testing that I've gone through, how hard it is for someone to not get caught. In the back of my mind I guess I just kind of think that everybody's clean, you know, at least as far as the decathlon goes. Like I said, it would piss me off if some European was using steroids and put a really good score together. Let's say he didn't get caught but a lot of people knew for a fact that he was on it. It would make me want to work that much harder. I never want to limit myself by saying that I can't score 9000 without steroids. If I was at 8940, I guess I would just be like, "I know I can score 9000."

Ron's point about how difficult it would be to avoid testing positive is important for two different but related reasons. First, American track and field athletes are among the most strictly regulated in the world, because in addition to tests from the I A A F, USTAF also administers its own tests, as does the NCAA. So, while it is, perhaps, more likely that his U S rivals would have a difficult time evading the "testing police," the same might not be true of his competitors from other nations. Second, as I have already pointed out several times in the course of this study, many within the track and field community strongly believe that testing procedures are at least a step behind the scientists developing new substances (Ferstle, 2000; Hoberman, 2000). That said, Ron refuses to become bitter or paranoid that his competitors *might* be employing illegal self technologies, and the image of a "clean" event that he keeps in the "back of his mind" seems to help prevent him from becoming distracted. In fact, the last part of the preceding quote

reveals his belief that, even if he knew another athlete was using steroids, for instance, he would continue to look for other ways of achieving his goals. Ron is, in this respect, the little techno-engine that could.

I was also interested in how Ron viewed the difference between things like steroids and other currently legal but controversial substances like creatine and herbal supplements. In the following quote, he expresses his belief that while creatine may or may not be performance-enhancing, the use of steroids unquestionably yields significant benefits.

I guess it's just the performance—how much better you can be with steroids than creatine. Creatine helps some people, and some people say it has no effect at all. But regardless, anybody who takes steroids knows how much better you can be. Your body's able to take so much more. I don't know even a whole lot about steroids. I just know that, from bodybuilding, what they can do to your body. I know what they can do if you were on them for a long time and then you stop. You just gain a whole lot of strength and muscle.

In addition to the substance of this quote, I sensed from Ron's tone that he felt that the comparison was not even warranted. For performance enhancement, steroids are clearly superior, but they are also unsafe and illegal. In contrast, creatine is safe and legal, but minimally effective. For Ron, once again, either course of action represents an unnecessary deviation from his routine engagements with self technologies.

Finally, while most of Ron's stories suggest that he is mainly concerned with other types of technology, he has been forced to become more aware of how he interacts with self technologies because of the numerous rules and regulations that exist concerning their use. In other words, having little knowledge about what makes one discuss better

than another has relatively minor consequences compared to not knowing if the powder you just mixed with your orange juice includes a banned element

I get stuff from USATF, drug testing stuff that has a list of what you can take and what you can't. Recently, I've had to do a lot of drug tests and you have to write down every little thing that you take how much Advil I was taking glucose and sulfate for a long time. Stuff like that. You've got to write it all down, so I'm pretty aware of what you can and can't take. The drink I'm taking now actually I've got to bring it into the training room today to make sure there's nothing on there. I'm pretty sure but nowadays there are just so many things that are banned, it's kind of hard to tell.

Conclusion

Given the connection between the quantification of sport and the influence of technology (Eichberg, 1982), the decathlon seems a likely candidate for *extreme* technologization, for it is, in a sense, doubly quantified. Time, distance, or height is converted to points, which are subsequently totaled to determine the winner. However, while Ron can never be accused of a laissez-faire approach to training and competition, his background and laid-back personality have obviously countered the overwhelming emphasis on technologically-induced performance that surrounds him. Further, in a culture where muscle is often accompanied by equal parts of narcissism, Ron seems refreshingly content with who he is, how he lives, and for the time being at least, his degree of cyborgification. He is a world-class athlete with but one toe submerged in the technological swimming pool, even as he watches his fellow competitors dive in and declare that the often morally and ethically cloudy water is just fine.

Towards the end of our conversation, however, Ron did show some signs that he may soon be ready to descend further into these waters. In the following quote, for example, he reiterates how important engaging with some technologies has been to his success.

Like I said I noticed the difference between my JC and coming here and how much better I've gotten. I know that a lot of that is not just the coaching and the maturing. A lot of it is the different kind of weights we have here. I've talked about watching the films and the treatment I've had in the training room. Those are 2 or 3 things that I know have helped me. The training room helps keep me healthy and taking care of injuries before they get bad. The films. I never knew what I looked like doing things before.

In fact, through the act of telling his story of technology, particularly those that involved self technologies, he came to a new realization of how relatively low-tech he is.

Actually now, talking about the steroids. I've never really thought about that before, about how so many decathletes, not necessarily steroids, but take so many supplements and stuff like that. On a scale from 1-10, I'd probably rate about a 3 compared to what everybody else is taking. I probably don't take hardly anything compared to what other people take.

This increased awareness parallels his engagements with technology in his life outside of sport as well, for while he has begun to use e-mail and the internet more during the past year, he still maintains a healthy distance from a thoroughly cyborgified existence. "I'm not really big into technology," he added, "I don't have a cell phone or anything." There is no question that Ron's identity, technologically speaking, is no longer that of a mediocre high jumper in the rural Pacific Northwest. But as I watch him on television finishing the 1500 meters and winning the Olympic Trials, I cannot get the image out of my mind. It is the image of a muscular, bearded cyborg in a flannel shirt, holding an axe, and heading for dinner at the "Big House." There also seems to be something shiny around his neck.

VI. Lenny

Introduction

On a Sunday afternoon five years from now, an NFL wide receiver will line up across from a defensive back. The defender's eyes will be wide open, his hands twitching in nervous anticipation as he watches the receiver for any hint as to which direction he will run. Then, remembering who the receiver is, he will retreat backwards several yards, giving him a cushion to prevent a short gain from becoming a long touchdown pass. The defender remembers what happened last time he played this particular receiver. He remembers the feeling of defeat and humiliation as the receiver caught the ball, looked back, and smiled as he pranced into the end zone. Whatever the outcome on this day, the defensive back will never forget to respect Lenny's speed. That *speed*.

Lenny was born 20 years ago in a large southeastern city, and he lived his early years in a predominately poor and African-American neighborhood that was crime-ridden and even dangerous at times. Lenny asserts, however, that while he often heard gunfire throughout the night, his family life was full of love and nurturing, and the fence that surrounded their property served as a buffer against the negative elements of his environment. That said, he also readily admits that "it wasn't really a good situation," and so his parents decided to move their daughter and six-year old son to a nearby town that was, at the time, almost rural in comparison.

From the stories Lenny told about his neighborhood, the move was certainly justified. While he and his sisters did have technologically-oriented toys, radios and remote-control cars, for instance, and while the family had standard sorts of devices, televisions and the

like, they were never taken for granted. There was the time when another young boy in neighborhood came into his yard and “borrowed” his bike, took it home and simply claimed it was his (Lenny’s father later recovered it) Lenny recounted another episode that illustrates how tenuous a concept ownership was at times. Right after Christmas of the year prior to the move, his house was robbed when the family was away, and thus most of their technological gifts were gone almost as soon as they had arrived Then, after the family had moved virtually all of their belongings to their new home, their old house was robbed again! It was at this point, watching Lenny laugh at the fact that some wanna-be thieves actually broke into their empty home and evacuated the leftovers, that I got my first glimpse of his unflappable sense of humor and optimistic outlook on life

Changing times: Lenny’s awareness of technology and community

At the time Lenny’s family moved there, Zanesville was a fairly small town. Instead of gunfire, Lenny awoke to the sounds of farm animals in his backyard, including chickens, ducks, cows, and horses, and he talked fondly about his new surroundings.

Ted: You sound like you spent a lot of time outside?

Lenny: Yeah, a whole lot I mean, that’s all I done When I woke up in the morning I was going straight outside every morning, just go outside I’d call my neighbors and we always it’d be fun We used to have little BB guns and go shoot birds and all kinds of stuff We used to make stuff out of rope, iron, and stuff We used to make toys out of any little thing It was fun

Time does not stand still, though, and Lenny has seen the march of progress and technology change Zanesville in drastic ways He visits his family, who still live there, regularly, and he has a strong awareness of the impact that technology has had on the local community

Talking about technology last time [session], I was thinking about how I go home to

look at that You know, what's built and what's working differently. I know that now when I go back to Zanesville, the little town that I had moved into is not a little town anymore It's pretty much a city now

Soon after moving to Zanesville, he began playing for the pee-wee league football team his father helped coach Though he was only six, Lenny quickly showed potential, and his team went undefeated for the next several years In middle school he had the opportunity to run track for the first time, although his main focus continued to be football In fact, he always saw himself being successful in football, and he still seems to view his track career almost as an accident As he describes it

I never knew that this track thing was going to blow up to be so big as it is I kinda knew about football, cause that's what I've wanted to do. I love football, but I didn't think this track was really going to do what it has done for me now I didn't know I was fast!

His training generally reflected this idea, and even though he began to win state titles early on he still basically used track as a means of harnessing his speed for football The athletic facilities at Lenny's school reflected his different thoughts regarding the importance of his two sports, for while they had a well-maintained football field, the track that surrounded the field was, as he described it, almost an after thought

Lenny: We had a dirt track A lot of people had the other kind of track I forgot the name of it and I run track! That's bad Like the track that's out there! [university track] We had a dirt track, and I'm not gonna lie Our high school is pretty big We had pretty good machinery, a nice weight room I would say we had pretty good facilities

Ted: Except for the dirt track?

Lenny: Except for the dirt track I still don't know why they still got that dirt track That's a big question Maybe I can fix it one day

Ted: How do you mean "fix it?"

Lenny: Maybe one day if I'm successful like I want to be and I reach that goal that I'm trying to get to I can give back a little I plan on doing that I plan on giving back to my community, to the people that helped me where I'm at today If that track is still there, if I make it you can guarantee that I'm gonna take that down

This exchange also illustrates that, while Lenny certainly appreciates improvements in track surfaces, he is not particularly concerned with the specifications of the rubberized Mondo track that he runs on every day. He shows a philanthropic side, as well, in expressing a desire to return home after he becomes successful and replace the old dirt track, raising its level to that of the rest of the facilities. His pride in such an endeavor is touching, but it also reveals a sense that with technology comes status, a kind of respect that technology can provide in America. Class manifests itself in the presence or absence of more or less technologized environments.

Tools of a sprinter in the 21st century

Lenny sees innovations in implement and equipment technologies simply as signs of the techno-times. In the following passage he describes the drastic changes he sees between his old spikes he wore in high school and the ones he wears now, and goes on to explain the experience of wearing the new ones.

Lenny: I think that man is trying to keep up with the time of the world. It's the year 2000, let's make shoes more futurized. Back then you had a white shoe with a check [swoosh] on it and that was it. Nowadays you got a shoe that's got ridges on it that look like you could fly, you know. I know that recently I just got some new 2000 spikes, and you can tie those spikes up, and you could also tape it across, and it sticks together. So, you have two supports. On the bottom of it you have more support and more grip to the track and everything. So, it's totally different from what I had back in the days.

Ted: Does it feel different when you run in them?

Lenny: Most definitely you can feel the difference. I know back then, it was hard. Running in those shoes was hard. These days they're more comfortable. They're getting a whole lot lighter. Back then they were heavy. They were heavy and they hurt, but you had to deal with it. Now it's different.

"Different" is certainly one way to describe the latest developments in shoe technology, the latest of which involves the use of new space-age materials that help reduce leg

muscle vibrations caused by contact with the track. Less vibrations means less energy loss, and preliminary tests indicate that this, in turn, translates to a significant (though miniscule) performance improvement. Lenny's appreciation of these sorts of shoe innovations is also a perfect example of Bacon's romanticized faith in the liberating effects of technology. He frames the shoes he wore "back in the days" as part of a low-tech culture of pain and drudgery that the lighter, more comfortable shoes of today have saved him from.

Lenny also sees videotape analysis as an important component of his training, and describes how movement technologies allow him to correct his form better than he could without it.

Back in the day you could do certain things and somebody could tell you but you really couldn't comprehend what they were saying. You could, but almost like you need an example, something to see so you can really understand what you need to do. I know for example, me and Vernon (my coach) will go out there and do starts and I can guarantee you that by the end of the week we can have my start to perfection because these days we use films. We have cameras looking at your every move. You can watch your running on TV, pause it, you can rewind it and play it in slow motion and see all the things that you need to get fixed. That's pretty much in every sport, because I know in football we do that too. After the games we come back and have meetings and we use films to see exactly what we've done wrong, how can we fix it, how can we get better. That's my biggest thing as far as the relationship between technology and sport is the fact that nowadays you can actually see and fix what needs to be fixed, and get done what you're trying to accomplish.

Though not as relevant to the present study, Lenny's description of videotape analysis also illustrates how similar technologies may be used in similar ways in different sports. According to Lenny, the majority of the feedback he receives from videotape analysis is negative. The videotape highlights the flaws in his form and allows he and his coaches to fix the things he has done "wrong." The videotape is an inanimate, omniscient second

coach that, in collaboration with its “human” counterparts, aids Lenny in refining his performance

Finally, Lenny briefly mentioned how superior the rehabilitative technologies at his university were to those in his high school. While his coach’s advice in high school was always, “Go home and ice it,” the technologies he has access to now seemed to truly impress him. In particular, Lenny mentioned a machine that mechanically extends the leg to stretch the hamstring muscles without the athlete having to exert any unneeded effort.

Last year when I pulled my hamstring I had to go up in there and they had this machine for me that took care and stretched part of my hamstring. Instead of having somebody stand there and stretch you, you just put your foot on some kind of a little hook and press a button and it stretches it for you!

As this quote illustrates, Lenny enjoys the liberating experience of being able to employ technology to heal himself, rather than being at the mercy of the trainers. This certainly takes the “human element” out of the healing process, yet for Lenny it also tied to increased feeling of independence and agency.

I love it because you can actually go and nowadays they got machines that can take care of you and you can pretty much control it yourself, instead of having to wait for someone and have a trainer come and stretch you out or something.

Proof positive? Self technologies and the banned list

Lenny has experienced the consequences of transgressing the boundaries between “legal” and “illegal” self technologies first hand, and in the process he also found where he stands within the hierarchy of elite track and field. After winning the indoor 60 meters, Lenny completed a successful outdoor season and then traveled to Denton, Texas to compete in the Junior National Championships meet, where the winner would earn a

sport in the Junior Pan-American Games team. He was a heavy favorite, having earned All-American honors as a college freshman. The race was no contest, and Lenny was crowned the fastest under-20 sprinter in the U.S. But even before he had time to cool down, he was ushered into a room to provide a urine sample to officials for subsequent analysis. Prior to the test, he informed the nurse that he had taken Advil the night before the race due to a slight illness. In fact, he was so sick that he told his coach that he wasn't even sure that he could run. He did run, of course, and as far as Lenny was concerned that was the end of the story. The plot had its own ideas, however, and later that summer Lenny and his coach received a letter from USTAF informing him that he had tested positive for a banned substance, ephedrine, and that he had therefore been stripped of his chance to represent the U.S. at the Junior Pan-Ams.

The problem began months before the race took place, when he received the standard form athletes must sign declaring that they will not take any of the hundred or so types of supposedly performance-enhancing substances banned by the USTAF and IOC. For Lenny, signing the form was simply a formality, since he *knew* he was not on any drugs. What he could not have known, however, was that he was going to fall ill the night before the big race. As it turned out, the medication that Lenny ingested was not just Advil, or common ibuprofen, but Advil Cold and Sinus medicine, an over-the-counter antihistamine and decongestant that contains the stimulant ephedrine. Ephedrine, studies have found, can reduce reaction time, something extremely important to a sprinter coming out of the blocks.

In essence, USTAF's interpretation of Lenny's test results concluded that he had "polluted" his body, a notion that he still finds incredulous, in part because his identity as an NCAA football player was intact. While he was deemed 'dirty' by the governing body of one sport, he was perfectly "clean" in the eyes of NCAA drug testing policies. Lenny finds these differing standards "foolish," and he is adamant that there should be more consistency among the various organizations. His argument surely has merit. After all, if a substance aids performance in sprinting, would it not help him when he runs a fly pattern down the sidelines? This issue demands more attention than is possible here, but it is clear that the NCAA, and the sport of football, in general, demands much less policing of its athletes than does track and field.

After filing an appeal, Lenny and his coach attended a trial at the USTAF headquarters in Indianapolis. While his disqualification was upheld, he was not banned from competition, and because of his testimony USTAF decided to issue a public warning to athletes to avoid the use of medications that contain ephedrine. Lenny remains discontented, however, and the following quote speaks to his belief that the entire system responsible for the regulation of many self technologies is in need of a major overhaul.

It's just amazing. Like I told the lady, my advice to them was to make the forms that we have to sign. maybe send another one a week before you run so it can remind us that we can't take those items. When a person's sick they're going to just take whatever. I definitely wasn't thinking about some form that I signed a whole month ago. I was thinking about that I was sick and that I needed some medicine.

Lenny's story is one that shows us an athlete who was caught, literally, in the technological dragnet of his sport. In addition, his story clearly illustrates the tremendous chasm that exists between many elite athletes and the rule makers of the sport, as well as

the absurdity of having to sign away one's ability to take something like cold medicine. In Lenny, we see an athlete whose efforts to ensure the health of his body ultimately led to accusations and convictions that he was, in one sense, unhealthy, and that his performance was not valid. The list of substances banned by the USTAF and the I A A F is long, and filled with names that could tongue-tie all but the most informed readers, a fact that relates to the increasingly specialized "expert" knowledge required to even participate in debates over various self technologies. Lenny had no voice in determining that the medication he took should be banned, and for this reason it is, perhaps, not surprising that he did not pay much attention to the numerous columns of chemicals contained on the list.

The "right" stuff and "bad medicine": Constructing the chemical line

Like all elite track and field athletes subject to the panopticism of drug testing procedures, Lenny formulates his own criteria for what sorts of self technologies fall within his acceptable cyborg parameters. This task is particularly interesting in Lenny's case, however, because his body is, in a sense, seasonal. During the summer he must bulk up for football, and towards the end of the fall he must shed this excess weight before the beginning of track season. During the last year, however, the latter part of the process has been de-emphasized because of the amount of size he feels he needs to add for football. The 17 pounds of extra muscle weight is hard to miss, and his track coach has expressed some concern with Lenny's changing bodytype. While he took creatine for a short period, he discontinued using it because of concerns over cramping. Thus, he owes all of his increased size to lifting weights and eating, though he admits that what he

was eating was less of a concern than how much he ate. Speaking specifically of his diet, Lenny stated that, "To be honest with you, I'm probably about the worst person at taking care of my body."

His thoughts concerning self technologies involve several main points. First, he sees things like steroids and human growth hormone (HGH) as illegal, which, of course, they are. Lenny's second difficulty with these substances relates to the amount of time and effort he feels it takes to see the results, as well as the feelings of invincibility he associates with those who take things like steroids and HGH.

Ted: Where do you see the difference between creatine and things like steroids?

Lenny: Well, I see certain things like steroids as not legal, and that they get you to that point where you're all muscular and strong and you think you can do anything. Whereas these other types of legal drugs, like creatine and stuff like that, they can get you to that point, but the right way. Like creatine, the football players—we use it. That's just getting you stronger the legal way. The right way. It's taking time doing it. You pretty much take that and helping that by lifting and building yourself up, and not taking a needle that's just gonna do it by itself. You don't have to do any work at all. All of a sudden you're the Incredible Hulk. That's difference between the good medicine and the bad medicine.

What Lenny does not make particularly clear, however, is that while steroids are many things, illegal and physically risky among them, they are no magic pill capable of turning a thin distance runner, me for example, into the Incredible Hulk, at least without exerting an intense amount of effort over an extended period of time. Even then there are, some would argue, genetic limits. To be fair, the benefits of creatine are less thoroughly documented, and the evidence thus far suggests that creatine mainly helps the body recover quicker, and allows the athlete to work out harder and more often.

As Lenny goes on to elaborate on what he finds problematic about steroids he reveals that steroids also, in his view, raise questions as to whether he can accept the responsibility for his body and his athletic feats

Ted: So it means something for you to have to (work) ?

Lenny: It means a lot. Because you can actually sit up there and say, "I did this. I created this body. I created who I am today." Steroids doesn't let you do that. If I would have took steroids, I can't say I did this to my body or I'm the man or whatever. I can't say that I did this to my body. Steroids the man, you know. Steroids is what built me and got me where I'm at today and running fast. I didn't do it. That's the difference.

Thus, even though Lenny has used creatine, a substance that, directly or indirectly, facilitates muscle growth, he does not consider it to be the technological outsider that steroids are. When he crosses the finish line or stiff arms an opposing defender, the creatine that has been incorporated into his physiological makeup has also been assimilated into his own sense of athletic identity

In the following exchange between Lenny and I, he speaks at length about how he constructs the borders between substances he finds acceptable and those he does not. The fact that he leaps from my inquiry about the legalizing of self technologies to the "truth" of human performance reveals how passionate Lenny is when it comes to being able to identify track athletes as unequivocally "human" performers. In his mind, the use of things like steroids undermines what makes Olympic track and field special

Ted: How would you feel if everything were legal?

Lenny: I wouldn't agree with that. I wouldn't want that, because you're not getting the actual truth out of a human being. You know, when you go out there and you want to watch the Olympics and you watch Michael Johnson run the 200 in 19.32, you want to be able to say a human being ran that fast. That's it's true and nothing else helped him run that fast. He ran that fast. I think that's the excitement of track and field. That's the excitement of the Olympics and stuff like that. Being able to see a human being go beyond a certain point or whatever. I think that you'd mess up the

meaning of the Olympics and track and field if you just let everybody do whatever they wanted to do. It wouldn't be accurate. It wouldn't be right. I think they would lose a lot of people watching it more than anything, because people would know that, "This is not true. This is a fairytale." They would know that if he wasn't taking drugs he couldn't throw that far, he probably couldn't run that fast. If they did that it would take the spark that the Olympics and track and field have.

Lenny's story of self-technologization shows how powerful the myth of the untainted world of track and field really is, and the above quote reveals an insistence on keeping it alive despite the growing cracks in its veneer. In fact, perhaps the true fairytale is the story that perpetuates the image that the Games are, without question, contests between unadulterated human beings. Of course, numerous sport scholars have recently portrayed the Olympic movement as an example of sport gone terribly corrupt and corporate (see Lenskyj, 2000). Yet, there is something that drives Lenny's desire to maintain that "spark," and perhaps it is our collective yearning for *any* kind of tradition that blinds the sporting public from critically reading the Games, because to do so would be to spoil some sense of historical purity.

Lenny's belief that openly enhanced performances would result in a loss of viewership is important as well, because it appeals to the notion of a sporting community and rejects the notion that athletes should be able to use any technologies they wish in their efforts to improve. In short, he raises the provocative question: What if cyborg athletes threw an Olympic party and nobody came?

On a more personal level, Lenny sees the vast depths of the technological well, but he is willing to pit his current cyborgified state against anyone, both on the track and on the gridiron. The memories of his positive test result still remain as well, and he is determined never to repeat that experience again. He has experienced the consequences

of technological and corporeal boundary transgressions, unintentional though they were, and despite his strong feelings that the current standards and methods of enforcement are ridiculous, the following exchange illustrates that Lenny has, in a sense, “learned his lesson ”

Ted: If somebody asked the question, as they have done before in Olympic years, “If you could win the Olympic gold medal this year and no one would find out, would you take that pill?”

Lenny: Would I take it? For what? If I don’t need it I’m not gonna take it If I’m not sick or something’s not hurt on my body then I’m not taking anything I don’t take anything from anybody else either It’s like when you get on an airplane and they ask you, “Has your baggage been out of your hands? Has anyone tampered with your baggage? Have you taken any items from any other people?” Those answers to those questions are always no, and that’s how it is with me and running If it’s not a person that I know and I know exactly what and why I’m taking it If it’s not, “Am I taking it for my leg because it’s hurt,” or “Am I taking it because my nose is running” or something like that, then I’m not gonna take it

For the ardent defenders of even the most invasive forms of drug testing, Lenny represents a success story, and the former U S drug czar, General Barry McCaffery, might call it “mission accomplished ” Such is the power of the corporeal purity police Now, this is certainly not to suggest that Lenny, or any athlete, should engage with any sort of self technology currently illegal under USTAF or IOC rules The point is simply that, while he feels completely guilt-free, he still feels the need to ensure that he is never accused again We might all do well to think about this story the next time we find ourselves in the cold medicine aisle at the local drug store

Lenny makes a final important point by explaining that, although self technologies are important in both of his sports, their effects are more visibly obvious in track In football, there are numerous variables that can affect a player’s success As a receiver, Lenny explained that, even if he were on some kind of steroid there is always a possibility of

slipping, dropping the pass, or that the quarterback is sacked before he has the opportunity to release the ball. In other words, his technologization would effectively blend into the mosaic of the other players on the field. In contrast, when Lenny steps into the starting blocks, he is on display, and as I watched him speed around the turn in a recent 200 meter race, I understood exactly what he meant by this point. The nature of track is such that it is difficult to hide one's accomplishments. He ran, won the race, and instantly his time was flashed up on the scoreboard to the hundredth of a second, thereby offering proof of his effort.

“What’s the big panic?”—Y2K, human ingenuity, and faith

Lenny has a great appreciation for the conveniences that come with many modern sport technologies, but he also sees how a reliance on devices like the “stretching machine” in the training room could have unfortunate consequences in other spheres of society.

Technology is incredible, man. It’s taking over. It’s good in a way, and in a way it’s bad, particularly because there were jobs too at the same time. You got a lot of people wanting to have jobs but because of technology today you can press a button and it’ll do your work for you. You don’t need that person there, you know?

His use of words and phrases like “incredible” and “taking over” also sheds light on Lenny’s personal philosophy of technology. The equipment, landscape, and rehabilitative technologies Lenny has encountered elicit feelings of awe, yet he also shares a hint of Heideggerian substantivism in his sense that humans have little chance of preventing technology from penetrating every aspect of American life. Technology is something to be used as a tool, but the tool is taking on a direction and influence of its own.

Yet, in his final assessment of technology, he expressed his thoughts on the non-disaster that was Y2K. As the following quote shows, while technology may be advancing, it is still vulnerable to malfunction, and Lenny ultimately sees humans as having the proverbial upper hand in the long run, whatever happens to alter the technocultural landscape. He sums up his view of the future of American and global technocultures, and reveals himself as the paradigmatic instrumentalist. He has faith in the ability of human intellect to correct any problems or glitches that arise, but also senses that even if a technological meltdown were to occur, “we can still take care of ourselves.”

The big question is, and I think that everybody has this question, we’re getting into this time zone—this world where everything is machines and computers and stuff. What happens when a circuit breaks? What happens then? To be honest with you I think we’ll be fine, because the people who thought of those ideas are the same people who can do those ideas [i.e. fix technology] too. Like when everybody was going crazy about Y2K and all that, I mean in a way I think that was just a hype going. People just wanting to see what would happen in the year 2000. My theory came true. I said there wasn’t nothing gonna happen, and it didn’t. The human race is amazing. The way I look at it and how we’ve done different things so far, humans can—we have brains, minds that think of things. To be honest with you I think we’re gonna be here for awhile for the fact that we have the minds to do certain things and we can actually. If a circuit breaks we can still take care of ourselves. We were doing it before, so why not when it breaks. What’s the big panic? We’ve done it before!

Lenny referred to himself as a happy person numerous times during our interview sessions, and as he described what would be considered by most as a techno-apocalypse with a smile and shrug of his shoulders, “happy” seemed to be an oddly appropriate self-descriptor.

The last thing I asked Lenny to do was to describe the experience of talking about technology and his sport, and the following exchange seems to indicate that he did enjoy

the interview More importantly, perhaps, his comments reveal another aspect of his life that may work against any extreme forms of self-technologization

Ted: Well, how has this been for you talking about technology and track and field?
Lenny: It's been really fun I know it made me think about a lot answering these questions It kind of reminds me of what path I'm trying to do and what I came here for Sometimes you forget what you came here for and forget the Man up above because you're so busy doing other stuff But this brought me back down to who I really am and why I really came here and what I'm trying to get done and never forgetting how you got you here, which is the Lord up above

Out of all the academic works on cyborg theory and the impact of modern technology, in general, little has been written on the role of religion and spiritual identity in the digital age For Lenny, personal faith and devotion to Christianity is one sphere that seems relatively immune from cyborgification, a domain that houses feelings and beliefs more powerful than any device

Postscript

Lenny's season did not end on a positive note In fact, he failed to make it into the finals of either the 100 or 200 meter runs at the NCAA Championships after being All-American the year before As I talked to him on the telephone later, however, he seemed unfazed by this setback in his quest to become an Olympian wide-receiver In fact, he mentioned only that he was focused on preparing once again for football For this moderately cyborgified athlete, it is just another change of season

VII. Theresa

Preface: Feminine stratospheres

There are people who, when told that they cannot do something, look down in disappointment and decide to move on. Then, there are those individuals who, when confronted by someone who doubts their abilities, resolve themselves to not only undertake the task, but to master it. Such was the case with women pole-vaulters who, after years of lobbying the IAAF, achieved their goal of gaining entry into the World and Olympic Championships in 1999. Theresa is a member of this growing community of women “cosmonauts of the stadium” (www.iaaf.org). While her encounters with technology center on sport, however, her introduction to technology came from close to home.

Introduction

Theresa grew up in an upper-class suburban development in the Southwest, and her neighborhood seemed like something out of a utopian novel. When she and her two twin sisters wanted to ride their bikes, for example, their father would put up a temporary sign in the road that read “Slow--Children at Play.” It became apparent to me early in our conversation that Theresa’s family means an incredible amount to her, and she described her parents as supportive, practical, and completely open in their dealings with their three daughters. While they were disciplined, often through moral lectures, punishment was designed more to instruct than condemn.

Her family also instilled in her a strong feminist sense that she could do anything she wanted, regardless of whether or not a certain activity was gender-typed, or even restricted. She described an incident that involved her older sister

Like in kindergarten they had this thing where they guys made little stethoscopes and the girls made nurses outfits. Stephanie said, "No, I'm going to be a doctor." The teacher said, "No you can't. You have to be a nurse." She went home and my mom called the next day and said, "Don't you tell my daughter she can't be a doctor! She can be anything she wants." Next day, she got to make a stethoscope. Stuff like that always taught us that anything was possible.

The notion that gender is never an obstacle would become important later for Theresa, although for her it was the pole vault, not a stethoscope, that was labeled as off-limits.

While many families use television as a point of nightly communion, Theresa's parents were completely against such activities because they felt that they detracted from richer, more personal interactions. The same was true of the telephone, and in a house with 2 parents and three sisters they shared a single phone, although it had a cord long enough to allow for some privacy. She talked about the kinds of activities she engaged in, and the various technological items she and her family owned.

We had a really nice TV. We never got into the video games like Atari or anything like that. My parents felt like it sapped your mind and that you could be doing a lot more active things than that. They put a limit on TV because they didn't want kids to sit for hours in front of the TV, you know, "Go read a book. Play a board game." We did. I never thought that that was strange, you know, until I was with my friends and I was like, "I didn't watch a lot of TV growing up!" We had radios. We liked music record players. I got that when I was younger. Then a jam box with a single tape player. Then I got a silver one with a double cassette tape player. My first CD player I got which I bought with the money I earned running our day camp. Now I just have a really cheap jam box. I don't even have a stereo.

Aside from the obvious irony in having a "really nice" television that received so little use, this quote illustrates Theresa's tacit knowledge of the technological progression of

stereo equipment Interestingly, although many of her peers would have graduated from the single CD player to a more advanced device (e g a mini-system with a CD changer), Theresa is content with her inexpensive, comparatively simple device In a culture that views megabytes and hard drive capacity as status symbols, she has gone decidedly low-tech It must be noted, however, that some moves towards de-technologization have become trendy, almost chic among some upper-class circles (e g pre-ripped jeans, vinyl records, etc)

She admits, in fact, to being spoiled growing up, although she claims that she eventually gained an appreciation for all her parents had done for her when she moved away to attend college

I thought I was so deprived, because I went to this little snobby prep school where all my friends got brand new Lexus and Acuras and awesome cars I was like, " I didn't get a new car " I though I was so mistreated I look back on it, and once I got to [my first college] that's when I really started appreciating everything my parents had done for us, because they always gave so much

Staying grounded

Theresa has an almost infectious aura of positivity about her, a carefree and fearless attitude that suggests how, even in the increasingly technologized arenas of sport and American society, a rich and emotionally fulfilling support system can far outshine even the most fantastic, shiny gadget In the following exchange, Theresa expounds upon her outlook on life

Ted: So what were your dreams growing up?

Theresa: I was always a dreamer I think that one of my dreams was always falling in love and being swept off my feet by some man, some prince on a horse. I definitely always had that fairytale I used to be obsessed with Nadia Comaneci the gymnast I still watch that video when I need inspiration I think about how neat that was Also having a family and what it would be like to be a mom I always loved

kids

Ted: That's interesting Your dreams revolve around both family and sport

Theresa: I think that that's how I've always seen my life Sharing your life with other people and loving other people I compete my best and I'm my happiest when I am close to the people I love and I'm giving back to them Because it just makes me happy and when I feel that glow and happiness, that's when I do well because I get on the runway and I'm confident and I feel loved I know it sounds so stupid, but.

Ted: No, not at all

Theresa: You hear about all these athletes that are independent and don't need anyone, but I do need those people Those are my lifeline Those are the people who make me cherish life and get excited about living

While not related specifically to technology, I include this exchange to illustrate

Theresa's outright denial of the performance ethos and the kind of atomistic mindset that characterizes many elite athletes Her athletic identity is closely tied to family structure, which serves as a focal practice of its own In Borgmann's (1984) terms, her family *is* her hearth Technology is never a threat to overshadow any aspect of her identity, and in fact it is quite peripheral to her sense of self, even though, as we will see later, she is highly dependent on it

When I asked her to summarize her view of technology, in general, she talked not about sport but about medical technologies

Theresa: I guess I think of the medical advances and cancer research and surgeries and all the different medical things that they have to help you get better Whether it's rehabilitation for athletes or some laser surgery that helps you see better

Chemotherapy

Ted: So, technology for you means something that can help people?

Theresa: Yeah

She was exposed to medical procedures by her father at an early age, who was extremely open with respect to his own use of technologies as an Ob/Gyn She described one such time that stood out in her memory

In second grade he brought home a tape of a c-section, and he was putting it in and

said, "I don't know if you're going to like this It's going to be pretty bloody." I was like, "I want to watch TV " He was like, "Theresa, this is a surgery It's a woman having a baby " So, I watched

In part because of these kind of educational experiences, technology is neither mysterious nor dehumanizing for Theresa, and it is certainly not an autonomous force that drives society Rather, she connects it to life-saving procedures and practices—a true Baconian perspective

Injuries, (em)power(ment), and gender roles

Her earliest memories of sport participation were of gymnastics, which she began taking classes in when she was three The training was intense, even in her age division (the Little Stars), and the following quote illustrates the rigors she endured at such a remarkably early age, as well as her first experience with injuries

I was going to be a part of the team, but it was just really a lot of hours, and at that point the coach was a little crazy I was doing standing back tucks on the beam and he was like, "You're gonna stay up there till you do it yourself" I ended up missing the beam, straddling the beam, falling off on my head Then I was having a rough day On the vault I ended up spraining my ankle He takes a big bucket of ice I was a little girl, and it was up to my knee! It was just my ankle, and he made me stand in this bucket of ice water and said, "You stand here till your ready to compete or practice!"

Compassion was obviously not her coach's greatest asset, and while I am no athletic trainer, his recommended program of rehabilitation seems almost barbaric, especially considering the ages of the girls he was supervising The image of a pre-school Theresa shivering in a bucket of ice brings to mind Ryan's (1995) book, *Little Girls in Pretty Boxes*, in which the author describes elite gymnasts' experiences with similar coaches This was not, unfortunately, the last time one of Theresa's male coaches would treat her

like drill sergeants treat their new privates. Luckily, however, "Yes Sir!" was not in Theresa's vocabulary for long.

Because her parents were concerned with the quality of public education in the school district, Theresa attended a nearby private middle and high school. Despite the size of the school (Theresa graduated with 69 people) and its moderate level of athletic success, from the way she described it no expense was spared on equipment and rehabilitative technologies.

It's an incredible school. From middle school on it had a full-time trainer who had been the athletic trainer for the 49'ers. They had stim and ultrasound. We had access to orthopedics, anything and everything you could want.

In addition to the head trainer, there were several student trainers that serviced both the boys and girls teams. She also elaborated on the facilities that rivaled those of her present Division I school.

They were incredible. As nice or nicer than the track here. The training facilities we had pretty much everything you can get here, but smaller. The weight room was really well equipped. There were two large gymnasiums. There were 8 soccer fields and baseball fields.

The relationship between class privilege and access to sport technologies is certainly apparent here, and one can only imagine the conditions at the lesser-endowed public schools. The difference in access to rehabilitative technologies, in particular, has additional implications for debates over health care, in general, and the question of whether or not class status should determine the level of care in cases of injury (in this case athletic injury).

Theresa never really focused on track in high school, and at one point she was even a member of her school's national-caliber cheerleading squad. For her senior season, she

finally decided to devote her time only to soccer in the fall and track in the spring, but a hamstring tear during soccer season put a damper on the entire year. She described her treatment as “intense,” and she was in the training room three times every day, although her tendency to ignore doctor’s orders led to her re-injuring her leg several more times over the next few years. In spite of this setback, she described her overall career as being very successful, especially because her school competed against mostly other small schools. In part because of the lack of exposure she received outside the private-school league, however, Theresa was not highly recruited by universities. So, she eventually settled on attending a Division I school out west, where she entered as a recruited walk-on (i.e. non-scholarship) member of the cross-country team. She improved rapidly her first year, but a coaching change left Theresa and her teammates in the hands of a male coach who was, much like her gymnastics coach years before, both authoritarian and mentally abusive. Further, while she knew her body had limits, her new coach drove his athletes to the breaking point and beyond.

There were no days off. He didn’t believe in days off. “You take one day off a week and that’s 52 days and that’s 2 months of training you’re giving your competitors!” Of course, you never took a day off. The day of a competition we’d go on a 40 minute run the day of the meet. I ended up one day passing out and coughing up blood. So, needless to say I had done my morning run, and we had repeat 300s now. I called to tell him, “I’m not going to be at practice tonight because I have to go to the emergency room to get blood scans because I’m coughing up blood now.” He was like, “I guess you gotta do what you gotta do.” I was sitting here feeling guilty because I’m missing practice!

Theresa was treated as an inexhaustible machine, and her willingness to obey her coach’s instructions, however absurd, illustrates the danger of viewing the body as a limitless automaton rather than a technologized, but mortal being. To make matters worse, her

situation was magnified because of a battle with anorexia that she developed while striving to improve her times and obtain the final spot on the traveling squad. Though not directly related to technology, per se, this story suggests the type of love-hate relationship Theresa had with her body. While many view athletes as paradigmatic examples of fitness, enhanced with all sorts of technologies to augment their bodies, Theresa's body, not to mention her psyche, were far from well. A cyborg athlete? To some extent, certainly, but a vulnerable one at times as well.

Girls don't pole vault? : Technologies of a high-flier

A few years ago, not many people talked about the women's pole vault, and though it had been contested at numerous events, it had yet to be included in any major international competitions. Despite the lack of respect and recognition, in 1997 the current World and American Record holder, Stacy Dragila, and her coach published the first book on women's pole vaulting. It was during this year that Theresa began her transformation from an almost sickly (she had, again, been anorexic) state to the formidable woman she is today. As was typical of her personality, the fact that she initially encountered resistance from her coaches spurred her on, and after the aforementioned story about her attempt at distance running she immediately told of her entrance into the world of women's pole vaulting.

I had seen women starting to pole vault, and that's something I always wanted to do. In 7th grade I had seen the guys pole vaulting, and I wanted to do it. I went up and said, "I want to do that! I want to pole vault", and he [coach] was like, "Girls don't pole vault," and I was like "My dad says girls can do anything they want to do. I want to pole vault." He was like, "They won't let you compete!" I was like, "That's not fair!" He was like, "It's too dangerous for girls," and I was stronger than any of those guys. I had taken gymnastics and at that time you know girls develop faster than boys. I could bench press more than most of the guys in my class, but they were

like, "Sorry " They appeased me by letting me high jump, but I felt like I should be allowed to do that Anyway, I always wanted to do it and I was looking at the girls at (my college) doing it and I was like, "They're not very athletic " They were jumping like 7 feet! They were like shot putters It was terrible I knew I could do better than that So, I went home that summer and my parents found me a really good coach and he taught me how to pole vault. I also went to a bunch of pole vault camps

Because I knew virtually nothing about the pole vault, particularly the women's event, I asked Theresa to talk about technologies directly related to her event The following quote illustrates the fact that she is still somewhat of a novice, although she has certainly learned enough to make the Olympic Trials qualifying standard

I really haven't been around it long enough to know about technology in the pole vault As far as poles go and differences in poles, I don't really know because I've just kind of whatever people have given me I've used People talk about, "Oh, this pole and that pole," and we have girls who freak out about if they're not on the right pole You know Spirit or Pacer or carbon or whatever I'm just like, "I don't know." Whatever it is I think in terms of that I don't know that much about technology, and in terms of they don't make pole vault shoes They make long jump shoes They make high jump shoes, but they don't make pole vault shoes

In fact, there are several poles specially designed for women competitors , with names like the "Nordic Lady," which is supposed to bend easier for athletes who, it is assumed, could never muster enough strength to bend the male version, the "Nordic Pole " After reviewing her transcript, Tracy did add that, though she has yet to use them, new designs in women's poles have attempted to account for the differences between how men and women vaulters generally carry their weight by shifting the "flex point" lower for women The flex point is simply the point at which the pole first begins to bend, and the lower position compensates for women like Theresa who carry slightly more weight at their hips than their shoulders As my comment above alludes to, this development illustrates how gender-specific innovations might actually be sending subtle messages

that suggest that women cannot possibly be as strong as men vaulters, and that this fact represents a deficiency that must therefore be addressed through technological means.

I also wondered about how she saw the men's version of her event compared with the women's, and the following exchange reveals an awareness that some women's bodytypes are better suited to vaulting than her own. There is nothing superior about men's style of vaulting, according to Theresa. It is a matter of physiology and physics.

Ted: How do you see the women's pole vault compared to the men's pole vault?

Theresa: In terms of like physical, the women who are the best are the women who are built like men. They're the ones who have bigger shoulders and smaller hips, because the lever of when they start to invert their weight is in the shoulders and they're gonna go up. If your weight is down here where mine is, then it totally changes that dynamic. Because then your weight is on the outside and you just shoot off of the bar instead of going straight over. Then like . men have more power and strength. They're faster and get on bigger poles.

Ted: You mentioned that the women vaulters who are successful are built like men. Can you talk more about that?

Theresa: They're still successful, but the male vaulters not male athletes, male pole vaulters they have big shoulders, they got kind of like this (makes shape of 'V' indicating big on top and smaller on bottom). So, getting inverted I think is a lot easier, and most of the women who are really good are built like that. This is a conversation I had with Anthony today. We were looking at it and he was saying, "Yeah, Suzanne is built like that and Elanor is built like that and the German girl is built like that." Then he said, "Yeah, the Spanish girl is built like you!" You know, I'm like, "Who's the Spanish girl? Who's heard of her!" That's not to say that I don't think that I can't be successful with the way I'm built. It just means that I have to learn to use different muscles and do things technically different.

What Theresa does not question here, though, is the standard against which women vaulters are being judged. In other words, as I have already stated, the average physique of male vaulters is seen as the model by which women's bodytypes should be judged, because, of course, males vault higher than females. This notion, combined with the aforementioned differences in pole construction, point to an obvious gender bias in the event itself, a bias that, unfortunately, extends to most other events in which performance

is strictly quantified and which rewards physical characteristics that, on average, favor men

Because she mentioned size and strength as two factors that limited her ability in her event, I asked her to talk about technologies she would consider using to aid her in becoming stronger, especially in her upper body. Aside from standard multivitamins, she also uses iron pills to prevent anemia, which she has had on several occasions. As the following quote suggests, however, Theresa is firmly set against the use of performance enhancing, as well as recreational drugs.

Ted: What kinds of things would you or wouldn't you do to get stronger. You're saying that strength is an important component of improving in the pole vault, so .?

Theresa: I would never use drugs. That's something I've never smoked pot. I never wanted to do any type of drugs, and to me it's cheating.

The fact that she mentions never having used marijuana also speaks to her ethical standards both in sport and her non-athletic life, as well as to the cognitive connection between ergogenic aids and other illicit substances. Marijuana would not be classified as a performance-enhancing drug for pole-vaulters, and yet it receives the same scorn as those that do.

Theresa likes weight lifting for numerous reasons, and although she has never kept detailed track of her workouts or used any supplements, the following quote illustrates that changing her bodytype through weight training has helped her to view herself as a *strong* woman, rather than a weak, anorexic woman. Gender and muscles, for Theresa, are married in meaning.

Ted: What did you like about weight lifting?

Theresa: I felt strong, and like they'd always make comments like, "Girls can't do

pull-ups Girls can't do dips " And I could always do a lot of those things so I would love that, going in there and ripping out dips and be like, "Yeah!" So, I think I was just kind of pushed into that role of being a distance runner I built muscle easily I remember from my sophomore year on everyone saying, "You got guns!" Stuff like that

This quote clearly illustrates the aspect of Theresa's personality that resists male authority figures or peers who question her ability to do whatever task she is attempting. Her self-characterization as "strong" is as much related to her defiant confrontation of patriarchal notions of what women physically can and cannot do as with her actual developed musculature Referring to women in male-dominated societies, Young (1990) states that, "Insofar as we learn to live out our existence in accordance with the definition that patriarchal culture assigns us, we are physically inhibited, confined, positioned, and objectified" (p 65). During competitions, Theresa and her implement extend her formerly limited corporeal space outward and upward Thus, much as learning to throw a ball in a more fluid and confident manner by fully extending the arm is a form of phenomenological emancipation (Young, 1990), so too is the experience of soaring fourteen feet in the air, with the additional reinforcement and confirmation of corporeal strength

From the small screen to the big screen: Video images

Theresa also discussed her use of videotaping in practice, and she makes an interesting tie between the techno-visual and her use of mental imagery

I think film has helped a lot Because I'm a very visual learner, and I've learned I think better through watching myself than from when my coach tells me I'm doing something Because for me, to be able to see it and say, "Oh, I really am under," or "No! Look, I'm doing this not stepping right " or whatever Then I can picture it my head, because for me, what I do when I'm on the back of the runway is I have a picture of myself vaulting right before I go, and when that gets clouded that's when

I'm not vaulting very well When I can't make my picture before I vault So, I've always been I've always liked the video, because I guess that's when I first learned how

As the preceding quote illustrates, Theresa ties movement technologies with the use of sport psychological interventions, and uses the video to help concretize the image of herself going over the bar so that, just prior to beginning down the runway, she has a vivid picture of herself in her mind This story also provides a clear example of the connection between the mind and body, and how technology becomes an additional component of cyborgified performance The body cannot perform without the focused mind, and the mind is aided in this task by movement technologies It is the trifecta of high performance sport--mind, body, and technology

In a conversation several months after our first interview, Theresa told another story that involved her experience of vaulting at the Olympic Trials directly in front of the jumbotron screen While she tried not to become distracted by having to travel down the runway while her giant twin was coming at her, she admitted that, "It was weird to have images of myself right there It was zoomed right in on you, and it was like, 'What am I doing up there?'"

Check your head: ADD and normalizing self technologization

Theresa suffers from a relatively mild case of Attention Deficit Hyperactivity Disorder (ADHD), though many use the term Attention Deficit Disorder (ADD) as a general term for the various types of ADHD (www.add.org, 2000) While the nature and severity of ADD symptoms varies greatly among individuals, some common characteristics include a difficulty in attending to details and sustaining focus on a specific task The precise

cause of the disorder is unknown, although many researchers currently believe ADD is caused by biological factors that reduce the neurotransmitter activity in regions of the brain associated with attention (www.add.org, 2000) Theresa described the specifics of her own symptoms

My ADD was never It wasn't the hyper, like when kids get out of control Mine was like, I'd be in class looking out the window and just in a trance I mean just daydreaming with a thousand things My teacher would be like, "Theresa!" and someone would have to touch me before I snapped out of it I was just very distracted and kind of spacey

Until very recently, Theresa used the drug Ritalin to counter her ADD Though she took lower doses as she grew older, she was wary of coming off of the drug completely because her sister's attempt to do so had resulted in her failing most of her college courses While Theresa used Ritalin for academic purposes, it was also necessary in her athletic life, as she explained when I inquired about the importance of mental focus in her event

Ted: I was just thinking about the concentration it must take to run down the runway with a pole ?

Theresa: Yeah, you're exactly right, and that's something that they're telling me right now, that I can't take Ritalin I do have a doctor's note, but that is something that scares me because once I get out of school and I had tried one time with not taking it and I wasn't even really aware of it, but everything was distracting me I was off in spaceland and ended up spraining my ankle I'm not saying that that's the only reason and that I couldn't function without it I can do strength workouts and stuff like that, but when it comes down to vaulting I like being more focused!

She went on to explain how she came to reconcile her use of the drug, considering her strong stance against other banned substances

At first I thought Ritalin was cheating It's banned, you know. That has to be cheating too I guess the way my father described it to me and the fact that they do allow it through doctor's notes and stuff like that makes me feel, "OK It's not cheating " And that was something that I did try and stop taking because I didn't

want, you know. that edge I never wanted to do that [cheat] because to me there are a lot of other things that I want out of life besides this

While her father convinced her that Ritalin simply helped compensate for a chemical that her body failed to produce, prior to the Olympic Trials the USOC notified her that she would not be allowed to compete using Ritalin because of its status as a banned substance "It was scary for me," she said, "because I was on it since I was a little girl " Indeed, without Ritalin she would be subject once again to lapses of attention, something that could compromise her ability to compete at the Trials So, she was forced to switch from Ritalin to a drug called Wellbutrin, which prevents the production of substances that destroy serotonin, and which essentially has the same function as Ritalin for people with ADD Fortunately for Theresa, the new medicine has given her a more consistent relief than the Ritalin, but she must still hope that her current means of treatment is never considered to be performance-enhancing in the eyes of the sport's rule makers

Future heights

We cannot be sure whether or not her "giant twin" on the jumbotron played a part in her failure to clear a height at the Trials It could have been, as they say, not her day There was a bit of irony to the occasion, however, for while Theresa had once fought against people who told her that, "women don't pole vault," she now found herself signing autographs for other people whom she had inspired, even though she had not produced her best effort She will complete her masters degree in sport psychology in a couple of years, and her goal is now set on the 2004 Games There is always time for a family of her own, something which will call for engagements with new, but familiar technologies

I plan on getting an ultrasound and testing to see if my child's healthy Yeah. I've grown up with that That's what I'm most comfortable around doctors and stuff and that setting

Postscript: All in the family

Fast-forward to several years from now The place? A house, nestled in a suburban development near a major Southwestern city. At a small dinner table, I see an empty space set aside for an influential, yet unassuming, guest "Mother!", a young child exclaims, "I think technology has arrived." "Actually," an older, yet still defiant, Theresa whispers to herself, "she's been here all along " And with a brief glance in the direction of her trophy case, she moves to answer the door

Part V: CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

The primary aim of this study was to examine elite track and field athletes' experiences with technology through the creation of life history narratives. By allowing the seven Olympic-caliber participants in this study to tell their stories, I hoped that we might obtain a better understanding of how these individuals employed or resisted various technologies, and their rationales for doing so. While not a main focus of this project, I also wanted to provide athletes an opportunity to voice their concerns regarding policy decisions related to sport technologies, and perhaps inspire them to take a greater interest in how they might be more involved in decisions regarding the use or restriction of various technologies in sport as well as their non-athletic lives.

The purpose of this final section is to connect the purposes of the study to the results of the narrative analyses, and to discuss some of the concepts I outlined in the first two sections of this study as they relate to the seven technological life-history narratives I presented in Part IV. I also discuss the implications of these findings as they apply to other lines of research, and suggest studies that might be done in the future.

As Balsamo (2000) states, "Cyborgs alert us to the ways culture and discourse depend upon notions of 'the other' that are arbitrary and binary, and also shifting and unstable" (p. 155). The seven narratives presented in this study surely provide evidence of this notion, for the lines the participants drew between concepts such as legal/illegal, natural/artificial, and body/other are, despite their existence in an homogenizing elite sporting environment, hopelessly inconsistent and idiosyncratic, and this despite the occasional assertion that their views reflect universal norms. On numerous occasions,

participants' narratives demonstrated that sport technologies are not autonomous, and their stories provide numerous examples of times when they resisted technology and relegated it to a more peripheral position in their athletic and non-athletic lives. Yet, participants also told stories that suggested that they were, to some degree, complicit in the maintenance of unequal power relations between athletes and the governing bodies that determine what sorts of technologies they may or may not use. Although all of the athletes in this study should be viewed as sporting cyborgs, they vary greatly in their methods, degrees, and experiences of cyborgification. Further, their ways of interfacing with or resisting technology, in many cases the same sorts of substances and/or devices, as well as their rationales for doing so, were contingent on numerous factors related to their life histories. Therefore, I begin with an attempt to sort out these contradictions to the degree that it is possible. At the same time, it is also important to remember that, by definition, no story of cyborgification could ever be completely unified, and that the purpose of this study was to examine the idiosyncratic process of cyborgification of the seven participants.

The cyborg athlete: Dehumanization or posthumanization?

In Part II of this study, I sketched out two opposing positions related to sport technologies. From one perspective, many sport technologies have a "dehumanizing" quality to them, for they somehow compromise something about sport that other "humans" identify with. In the most extreme cases, self technologies such as blood doping and steroid use undermine the existence of what Simon (1994) terms the "original I." From another view, the increased technologization of elite sport and its athletes

represents the emergence of the cyborg age of sports. Therefore, those who feel that sport and its competitors should remain buffered from the expanding American technoculture mistakenly assume that sport is in any way isolated or separate from the rest of society.

I also introduced the notion of the paradox of performance, which refers to the idea that elite track and field athletes are driven to perform at higher and higher levels but restricted from using the most efficient and effective means of doing so. In Olympic and other major competitions, the device paradigm that Borgmann (1984) claims threatens to envelop our collective focal practices is held at bay with the help of various surveillance technologies administered and controlled by the governing bodies of the Games and track and field.

While sport scholars have called for a move towards “post-sport,” where technologization is an accepted part of exploring and extending one’s multiple lines of cyborg identity (e.g. Pronger, 1998), all of the athletes in this study seemed to view their engagements with technology as unproblematic as long as technology was *not* a constituent part of how they viewed and defined themselves. Of the melding of humans and technology, Hayles (1995) states that, “Sometimes the interpenetration is presented as the invasion of the deadly alien into the self, sometimes as a symbiotic union that results in new subjectivity” (p. 323). Judging from the seven narratives presented in the previous section, whether technology was “alien” or “symbiotic” was largely contingent on the context and the specific type of technology being addressed, although there was a general consensus that self technologies represented the most “alien” form of

cyborgification. In other words, athletes had a recognition, even appreciation, of technology in general, although their strongest resistance came primarily with respect to self technologies. At times, there was an obvious reluctance to identify oneself as cyborg, rather than a willingness or enthusiasm to enter proudly into the cyborg era. This certainly runs contrary to Ihde's (1993) notion that Americans are beginning to define themselves technologically. From the perspective of the athletes in this study, the paradigmatic shift from viewing athletes as untainted "human" competitors to viewing them as fractured and incomplete meldings of humans and technology seems frighteningly foreign.

Clearly, athletes have infinite ways of constructing their identities and drawing the line between self and technological "other." The question is why? What is it about the "natural" body that prompts athletes to shy away from claiming their status as cyborgs? The narratives presented in this study generally support the contention that, even if they were able to use currently illegal self technologies, to do so would be to compromise the ability to claim ownership of the performance, and irreparably harm the integrity of their athletic identity. This latter point similar to Simon's notion of the "original I." Anthony, in particular, was adamant that he not pollute his athletic purity by ingesting anything that would compromise his ability to claim exclusive and unquestionable ownership over his performance. Further, the blurring of the boundaries between athletes and technology was viewed as undermining the entire sport. As I have argued, however, there is little evidence that athletes in this study viewed common supplements, rehabilitative technologies, and the various sorts of equipment and implement technologies in this way.

The key issue, it seems, relates to the idea that the sporting *body*, as much as the sport itself, must remain pure

One plausible explanation for this rigid division between physiological “self” and technological “other” relates to what Lenskyj (2000) calls the “Olympic hegemony.” The hegemony she refers to involves the notion that the Games and its athletes are “pure,” or should at least strive to achieve an idealized standard of moral and corporeal nobility. Once again, I have discussed related concepts throughout this study,

From the participants’ stories gathered in this study, it appears that, in the tug-of-war that exists between the performance ethos of elite track and field and the need to prove one’s physiological purity, hegemonic “humanness” is the victor. In fact, most of the athletes still applaud any efforts by the sport’s drug-testing bodies to ensure “clean” competitions. Anthony, for example, openly invited the prospect of 24-hour, unannounced testing. As I mentioned earlier in the paper, this form of indirect power relates to Foucault’s notion of surveillance (see also Shogan, 1999). The athletes know that they are being watched, for their physiologies are interrogated regularly, in many cases without prior notice. This, in turn, leads to “an internalization of the gaze and the policing of one’s own behavior” (Shogan, 1999, p. 37). Indeed, both Tyler and Ron mentioned that they had recently begun to pay more attention to the list of banned substances. Another important finding that further illustrates the hegemonic nature of elite track and field was the way that athletes established the connection between “natural” and “legal,” and “artificial” and “illegal.” For the most part, these twin dichotomies were simply taken as a given, and there seemed to be little if any effort to

question why certain technologies, particularly self technologies, were banned or allowed. The acceptance of authority in these cases was strengthened by the belief that athletes who use substances like EPO are not only breaking the rules, but transgressing the sacred boundary between athlete and technology. In other words, everything that they come to define as artificial (and by extension illegal) must also be labeled as unethical, a form of rationalizing practice known as the naturalistic fallacy, or the act of unconsciously attaching innate characteristics to disputed concepts. Such an athlete, then, is doubly implicated. Not only is an athlete on EPO a cheater, but he or she is even excluded from membership in the species of "human."

The ramifications of these sorts of cyborgian transgressions were quite figural in the minds of the several participants in this study. In fact, two individuals were subjected to warnings and/or punishment from the governing bodies because they ingested substances aimed not at improving performance, but at rectifying a physical condition that would have prevented them from being able to compete. For Lenny, taking a seemingly harmless substance like Advil Cold and Sinus led to his almost being banned from future competitions, even though such self technologies are perfectly legal in football. (Note As I finish this last chapter, the 2000 Olympic women's all-around gold medallist in gymnastics, Romanian Andreea Raducan, has been stripped of her medal for taking an over-the-counter medication.) For Theresa, a potentially debilitating case of ADD necessitates the use of some substance to help her focus and attention. Cases like these problematize the difference between enhancing and normalizing self technologies, and raise further questions about the ethics of the regulations in the first place.

Lenny's and Theresa's experiences have a parallel in the case of professional golfer Casey Martin, an individual mentioned by both Anthony and Tyler during their interviews. Martin, just like Theresa, has a debilitating disease that would leave him unable to compete if left untreated. In Martin's case, of course, the "treatment" is a cart he uses to ride around the course, but the aim of both athletes' use of technology is to normalize a condition that inhibits their ability to take part in their sport. Is walking the course a constituent part of the golf game? Is the ability to focus without the aid of a drug a constituent part of pole vaulting, even if one's brain does not produce a vital chemical related to attention? Such examples raise serious and provocative issues about who is included among the "natural," who is excluded and labeled as "polluted," and who makes this determination.

The preceding discussion also speaks to the murky issue of fairness. "Fair competitions must prevail--Somehow!", exclaimed sport philosopher Andy Miah (2000, p. 2). Indeed, debates over which types of devices, substances and practices should be allowed or restricted have often turned promptly to issues of fairness. While issues of technology and fairness were not the focus of this study, I agree with the argument that blood doping may, in fact, be considered cheating, because the substance is used in secrecy and often not available to others (though this is questionable at the elite level). However, it is my conclusion that in an age where athletic competitions involve athletes who, to some degree or another, are engaged with technologies that, by the very nature of the global market, are not equally accessible to all, there is no possibility whatsoever of "fair" competitions. There is only the chance that the competitions will be . . . interesting.

In fact, perhaps a shift away from an emphasis on victories won by absurdly minute distances and times to an appreciation for different levels and styles of technologized performance is one road to a more inclusive sport

In an effort to creatively address the issue of fairness, some have proposed that a separate Olympics might be held, one for so-called “natural” athletes and another for athletes engaged with all sorts of technologies, from steroids to genetic altered bodies to mechanical arms (Gray, 2001, Miah, 2000, Winner, 1989) The result would be a sporting version of the popular British science fiction inspired game show “Robot Wars,” in which human contestants pit their homemade remote-controlled robots against each other Some robots are small but highly mobile, while others are larger and more powerful, but awkward and unstable, and I would contend that the practice of differentially skilled droids doing battle has some interesting parallels for athletic competitions where literally anything goes Even in the savage social climate of ultimate fighting, combatants exhibit vastly differently bodytypes and styles In both Robot Wars and ultimate fighting, a singular form is discarded in favor of diverse ways of being in that sport Fairness becomes whatever the local community defines it to be

Who’s (What’s) on first?: The issue of posthuman spectatorism?

Related to the further cyborgification of the athletic body is the question of whether people would support an openly cyborgified track and field, the assumption being that observers would no longer be able to identify with the athletes We see this in Lenny’s belief that fans would turn away from such a technologized “fairytale,” as well as in

Zorpette's (1999) expression of doubt that few would be interested in "circus freak" athletes

However, one could make the equally compelling argument that fans would simply adjust their sets, blink a few times, and cheer for their favorite cyborg. Further, the notion that most track fans somehow feel any corporeal identification with world-class athletes in any sport seems rather far fetched to begin with (Farrey, 2000). Even for a competitive runner like myself, the gap between my abilities and those of Tyler are enormous. What about my experience of watching an NBA or NFL contest? How could I rely on the criterion that I must be able to see myself in these athletes for me to remain a fan? I remember a time when I was sitting in a whirlpool in my college training room, and a future NFL Hall of Fame lineman came in and submerged himself in the tub next to mine. He was the largest human being I have ever come into close proximity with, and while we may both have been "human," the amount of technology (not to mention red meat) and the years of body shaping that went into creating this man was incomprehensible to me. Further, why should recognizing athletes as "human" be given privilege over recognizing athletes along any other line of social difference? White males still watch NBA basketball, and one of the highlights for me during the Olympics is women's gymnastics, despite my inability to complete even a simple cartwheel.

With respect to the use of technology to enhance performance, it is important to remember that sport exists within the larger technocultural context, and that its collective values are, therefore, always in negotiation with those of society. More specifically, in other social spheres people engage with all sorts of technologies that can be labeled

performance enhancing I have a friend, for example, who drives trucks along the entire length of New York State, and in our last conversation I asked him if he was the kind of driver who bought those little packets and bottles of uppers that can be found in every roadside gas station "Most of us take more than that!", he responded. Should I now view my friend as dehumanized somehow? Further, should his wages be garnished because he used "artificial" means of enhancing his performance? Another example might be helpful My mother, a fashion designer and dressmaker, recently purchased a machine that allows her to complete significantly more work per hour The computer she uses also has the capability to illustrate what her designs will look like on people through computer simulations This device has certainly disburdened the practice of sewing and enhanced her performance, but has she taken the "human" element out of the creative and production processes?

Some might once again appeal to Suits' (1995) notion of the lusory attitude There must, according to this argument, accept certain obstacles to performance for sport to maintain what is special about it To do otherwise would be to de-skill the given task to the point where it would be impossible to deem what constitutes an acceptable and meaningful athletic feat This is a persuasive argument, but the fact remains that there will be athletes in Sydney games and in virtually all other elite sports who have received intimate portraits of their bodies through videotape analysis and biofeedback equipment, who have taken medications for both physical and psychological ailments, and who have perhaps even ingested currently illegal substances

In fact, several athletes competing in track and field have recently been reinstated by the IAAF following short-term suspensions, or are in the midst of appealing for the right to compete after testing positive for banned substances. Two such cases stand out. First, there is Dieter Baumann, the German 5,000 meter runner and 1992 Olympic gold medallist who tested positive for nandrolone in 1999 and subsequently claimed to have been framed. The method? Someone had laced his toothpaste tubes with the steroid!¹ (Note: The week before the 2000 Games, Baumann was cleared by the German federation but not by the IAAF, and thus he was unable to compete in Sydney.) The second case involves a drug that many feel is not even performance enhancing in most events—cocaine. In 1999, Javier Sotomeyer, the Cuban world-record holder in the high jump, tested positive for the narcotic, but he was reinstated, coincidentally or not, in time for the upcoming Sydney Games. (Note: Sotomeyer claimed the silver medal.)

Thus, there indeed *are* openly cyborgified athletes competing in a sport that supposedly demands corporeal purity, even as track and field athletes' bodies are immersed in an arena that is profoundly and increasingly abuzz with technology. I would argue, then, that the fear that the sport will collapse because its athletes will no longer be recognized as "pure" seems overstated, especially when we consider the fact that some estimate that over 10% of Americans are already profoundly cyborgified through things like artificial organs and limbs (Hayles, 1999), as well as various life (or lifestyle) sustaining medications, from heart medication to AZT to Viagra. The "grandmother with a pacemaker" may, in fact, have almost as much in common with elite athletes as she does with her lesser-technologized peers.

Whatever the television ratings of the Sydney Games reveal, one worthy research project would be to qualitatively investigate the thoughts, perceptions, and experiences of sports audiences with respect to such issues. Further, given the especially rigid boundaries between “natural” and “tainted” in track and field, as well as in sports like swimming, it would also be interesting to investigate the experiences of athletes competing in sports that might seem more predisposed to more progressive stances towards cyborgification and what counts as “human performance.” NBA star Latrell Sprewell, for instance, has admitted that if it were safe, he would genetically alter or clone himself (Farrey, 2000), and while Lenny’s ingestion of a common cold medicine was deemed illegal by the USTAF, he was well within the range of permissibility of football.

My tentative typology of sport technologies

Regarding the strength of the typology of sport technologies I presented in Part II, the results of this investigation seem to indicate that the five categories are relatively well-suited as a framework with which to talk about various sorts of technology, at least those present in track and field. While some kinds of self technologies, genetic engineering for instance, were not even contemplated by participants in this study, I have hopefully provided enough other evidence to support the notion that technologies that may seem “out there” today may become much more relevant in the near future.

While issues related to sport and the Human Genome is a topic for another time, Miah (2000) suggests that the genetic engineering of athletes may be seen as less malevolent because it does not carry the anti-social stigma associated with drug use. Further, aside

from general fears over manipulating the building blocks of human life, gene therapy has the potential to provide amazing health benefits in the future. In other words, the perception, correct or not, may be that currently banned substances represent a “dirty” means of performance enhancement, while genetic enhancement is merely a “clean” application of high-tech science and technology.

In addition, despite claims that sport psychological interventions may collectively represent the “ultimate sport technology” (Butryn, 1999a, Hoberman, 1992, Segrave, 1993), my inclusion of sport psychology as a form of self-technologization now seems less convincing. No athletes even mentioned psychological interventions as anything they would consider technological, although the rationale for this omission seems to relate to the notion that, much like acupuncture or massage, sport psychology consultants are not actually inserting anything into the athlete’s head, but rather helping them to redirect and refocus their thoughts and emotions in a way that is more conducive to improved performance. Nonetheless, I still question whether or not more invasive procedures like hypnosis, or interventions that employ biofeedback equipment, would not qualify as “cognitive technologies.”

With respect to landscape technologies, several participants mentioned improved track surfaces, but for the most part they seemed mainly concerned with the competitions rather than the external environment. One notable exception was the presence of giant-screen jumbotrons, which in one case aided performance and in another distracted from it. Anthony, despite his negative views of videotape use, noted that he received more relevant feedback about his form from watching the flight of his discus than from

viewing his own body's movements, a notion that suggests a close phenomenological relationship between the implement and the body. For Theresa, travelling down the runway in front of an enlarged version of herself was, understandably perhaps, quite distracting. For most other landscape technologies, however, they seem to fit Ihde's (1983) third conceptualization of how we experience technology [athlete > (technology-world)] The cameras and other computerized devices in the arena of competition itself retreat into the larger environment, in which the athlete competes, experientially detached.

While several athletes mentioned attending the Olympic Training centers and taking part in studies using various movement technologies, it was the regular use of videotape analysis that was most common among their experiences. This was surprising, given the participants' emphasis on how important technology was in helping to enhance performance, and I cannot help but wonder what the researchers and their expensive machines would think! There was an interesting difference in the ways that some athletes viewed the use of videotape. For Tyler, Ron, and Lenny, videotape feedback offered an image of their true form, as opposed to the flawed data their bodies provided. In contrast, Anthony asserted his belief that an overreliance on videotape creates a rift between the athlete and his or her experience of the movement.

Of all the equipment technologies mentioned, the athletes in this study seemed most conscious of their shoes. All of the athletes told stories of how they got their first pair of shoes and how they viewed the importance of improved shoe designs. While I did not mention it in the preface of this study, like Tyler, Loretta, Miguel, and Lenny, I also have

fond memories of my first pair of shoes. One possible explanation for this shared experience is that an athlete's first pair of specialty shoes represents a kind of ritualistic indoctrination into the culture of track and field.

One unexpected finding was that, in general, the participants who used implements in their events were not overly concerned with them. While Anthony carried around his discus like a Linus blanket before the meet I observed, he admitted no connection with any of his implements. In addition, although Theresa seemed to have recently begun paying more attention to different pole materials, she was by no means obsessed with new innovations. Perhaps the most glaring lack of enthusiasm over implement technologies was Ron's blatant ignorance of why he uses certain discus and javelins, even though his coach constantly encourages him to become more knowledgeable about such matters. It is not clear, aside from the idiosyncratic reasons discussed in each of the narratives, why the athletes in this study seemed indifferent at times towards the specifications of their implements, especially in events like the pole vault where meets are won by the smallest of margins. One plausible explanation is that athletes simply felt that, if they are prepared mentally and physically, the implement should not matter. That said, I found it curious that these athletes had such an overall lackluster attitude towards their gear given the stories I have heard about athletes taking the most extreme measures to ensure that their implements and equipment are as finely tuned as they are. Perhaps, fortunately or unfortunately, participation in this study will lead to an increased awareness of what makes a given implement better than another. On the other hand,

maybe the athletes should be applauded for their unwillingness to become consumed by performance and technology to that degree

Finally, athletes' stories of engagement with rehabilitative technologies also revealed, as I have already mentioned, isolated examples of resistance. In a win-at-all-costs sporting culture, one would expect that athletes would go to any length to prevent and heal injuries. That Anthony does not even ingest Advil, then, is almost inexplicable. Despite her painful experience with ultrasound, Loretta's act of completely forsaking all "plugged-in" rehab technologies was surprising as well. On the other hand, there were times when extreme measures were, in fact, taken to allow them to compete. This was apparent in Ron's story of his NCAA decathlon victory. Without the near constant use of various rehabilitative technologies (not to mention the pain pills), he would not have been able to finish the event at all. Lastly, some athletes also described a trend towards the use of alternative forms of rehabilitation, including therapeutic massage, acupuncture, and chiropractic adjustments. It will be interesting to track the use and efficacy of such treatments among athletes in future years, as the sport becomes even more technologized.

Where's the "oneness"? Implications for a phenomenology of sport technologies

In the second part of this study, I offered the following quote by Holt (1998): "Our sports gear suggests the possibility of corporeal escape—a kind of psychic involvement with something far larger, more powerful, and more perfect that any one of us could reasonably hope to be part of" (p. 5). There were occasions when athletes described their interactions with various technologies in this way, but there were also numerous times when the relationship did not involve any sense of "psychic involvement." During the

shot put and discus throws, both Ron and Anthony seemed to described their experiences as being connected with the implement up until the point of release. In Ihde's (1983) terms this represents an example of the first form of technological experience, for the implement was taken into the athlete's corporeal self during the event [(athlete-implement) > world]. While not stated explicitly by any of the participants, I would also argue that their collective experiences of wearing their track spikes represents the second of Ihde's (1983) forms of engagement with technology, in which athletes experience the world, in this case the track surface, through the technology, or in this case the shoe [athlete>(technology)>world]. Hence, it becomes apparent that perhaps the best type of experience with sport technologies, at least in terms of feeling something akin to a oneness with them, are often the most difficult to articulate because either the body and the implement are perceived as one (Form 1), or the technology is the phenomenological interpreter of the external world (Form 2). In stark contrast, of course, was Loretta's experience with her uniform. While the new fibers were designed to mesh with the skin, for Loretta the experience was one of feeling constricted, even suffocated, by her jersey.

Finally, I have already discussed athletes' different views of the use of videotape, but Anthony's experience with this particular form of technology is important to mention here because it seems to qualify as a fourth kind of experience not mentioned by Ihde (1983). While the other athletes used videotape analysis as a means of coming to know their movements-in-the-world, something that relates to Ihde's second form of technological interface, Anthony's belief that the videotape actually provides a vision of the world that distorts his own kinesthetic sense suggests that there are two worlds of

interest for athletes. For some athletes, the world-as-revealed by videotape depicts the “actual” world, and the images derived from the videotape are therefore used to make adjustments before their next attempt. In contrast, Anthony prefers the world-as-revealed *internally*, as opposed to the “other” world of the image. It is far beyond the scope of this paper and my competency as a phenomenologist to do so here, but this area seems replete with fascinating possibilities for further work on the phenomenology of technology.

Future research should also investigate athletes’ experiences with technology in more detail, perhaps focusing on the relationship between feelings of oneness or disconnection with technology and performance. For example, in the literature on flow and peak performance, athletes often describe feeling a oneness with the activity. It would be interesting to know athletes’ perceptions of technology and their bodies during such times.

Blurred boundaries?: Cyborgs, sport, and social difference

The seven life history narratives presented in the previous section provide an opportunity to assess Haraway’s (1985) claim that cyborgs, cyborg athletes in this case, challenge traditionally oppressive boundaries and facilitate potentially liberating experiences through the intersections between cyborgification and various lines of social difference. This is an important issue, because as Balsamo (2000) points out, what Haraway (1985) proposes as a liberating practice could also end up reifying gender differences that are bound in patriarchal constructions. The same could be said for other lines of social identity. Thus, while “cyborg” implies blurred boundaries between dichotomous constructs, sport can work against such de-differentiating practices through

the imposition of quantitative standards that favor “male” physiological athletic traits (e g strength, power, etc), as well as through the policing of gender boundaries via “gender testing” technologies

The two women in this study, Loretta and Theresa, both told stories of resistance against patriarchal notions of “weak” feminine bodies and sexist restrictions on what women athletes can and cannot do. However, they both viewed themselves as strong women, not something other than woman or post-woman. In fact, Theresa made it clear that women vaulters are measured in terms of how little their style deviates from that of their male (i e. the “norm”) counterparts. In other words, their cyborgian identities have freed them from one oppressive self-image and embedded them in another. To use another example, Loretta’s reconciliation with the (at least until recently) dominant notion in women’s track that the anorexic bodytype is better suited for running than the muscular-big-fat bodytype did not challenge the existing oppressive construct, nor did she express any interest in doing so. From one feminist perspective, in fact, it could be seen as problematic that she seemed to find nothing wrong with her coaches comments regarding anorexia and “wimpiness,” especially since some of her teammates were the reference point for this feedback.

That said, there is something to be said for the influx of gender-specific equipment and implement technologies that allow women to compete more freely, comfortably, and effectively. While some critical theorists, myself included, might take issue with the emphasis on quantifiable improvement in the first place, that is a separate issue from the fact that Theresa can now use an implement that is designed to better suit her size. What

needs further attention from researchers is precisely how women athletes use and experience technologies, and how women's interactions with sport technologies reinforce and/or work to undermine gender oppressive practices

I will not attempt to draw any definitive conclusions regarding the intersection between technology and race and ethnicity from the experiences of Lenny alone. As I have already suggested, class seems to be a much more figural component of cyborgification than any other form of social difference, at least prior to attaining access, something that all of the athletes in this study certainly had. I admit, however, that my inability to recognize any such connections could be related to my identities as a "white" researcher and a distance runner. In other words, perhaps there are experiences with technology that relate to race and ethnicity and/or specific events that, because of my lack of direct experiential knowledge, and despite my constant self-reflection during this project, I was not in as privileged a position to "see." Further, the literature on race, ethnicity and technology is still largely undeveloped, although these issues constitute a growing area within the discourse on reproductive and information/ technologies (Davis-Floyd & Dumit, 1998, Eglash, 1995). Therefore, I cannot discount the possibility that, much as Loretta articulated several relationships with technology that were explicitly gendered, Lenny may have experienced technology in ways that were related to race.

While not directly germane to how technologies are "read" by athletes, a brief note on the case of Ben Johnson helps to illustrate how the pollution of the boundaries between "clean" and "dirty" athletes do speak to the politics of race and ethnicity. As Jackson (1998) points out, when Johnson won the Olympic 100-meter title in 1988 he was hailed

by the Canadian press as a national hero, someone who had presumably used the (legal) technologies at his disposal to aid him in his gold medal performance. Almost immediately after testing positive for banned steroids and being stripped of his medal, however, the same press that had glorified him now portrayed him as a black Jamaican who just happened to have Canadian citizenship. The fastest man in the world, who had engaged with the technological “other,” now found himself labeled as the racial “other.” Johnson’s story demonstrates the need for further study in this area, as well as the connection between technological devices and status (e.g., cell phones, stereos, etc.). A fruitful area of study might also be the use of technology in the classroom among various racial, ethnic, and class groups.

Finally, while both Tyler and Miguel pointed to Africa, specifically East Africa, as the region where increased access to technology will yield the greatest impact on running performances, this may or may not come to pass. If the success of the Ethiopians and Kenyans in international competitions is due not to some genetic advantage, as some have suggested (e.g., Entine, 2000), but rather to a complex combination of physiology and culture, then the possibility exists that further technologization may work against cultural forces related to East African dominance in distance running. One interesting study, then, would be to qualitatively investigate how global technologization is affecting the lives and experiences of athletes in lesser developed nations in an effort to shed light on how technologies are read cross-culturally.

One last area of future research should involve the impact that cyborgification might have on the blurring of the distinctions between athletes of differing physical abilities. A

true cyborg sport could potentially open the gates for athletes with disabilities to compete alongside other athletes. While Anthony's comments regarding the use of prosthetics to compensate for his lack of height indicate that some athletes would be unwilling to count disabled athletes using various forms of technological augmentation as fellow competitors, the idea raises some interesting questions, especially if their performances are better than those of non-disabled athletes.

That said, performance gains have been sacrificed, at times, for perceived "naturalness," a notion that is illustrated by the lack of recognition of Paralympic athletes whose performances might one day exceed those of their able-limbed counterparts. We currently find numerous prosthetic technologies present within the ranks of elite Paralympic athletes, including the synthetic "foot" of 1992 Paralympic gold medallist Tony Volpentest. Volpentest, born without fully-developed feet, runs the 100 and 200 meter races with carbon-graphite devices bolted to sockets, the effects of which yield a springboard effect that catapults him forward more efficiently than a runner with "normal" feet. While his times are not yet comparable to those of other elite male sprinters, Froes (1997) has suggested that the possibilities of a shoe equipped with similar capabilities and worn by the likes of Michael Johnson would be almost unimaginable.

Thus, herein lies the power of the performance ethos of elite sport. It is not enough that athletes born without various limbs are capable of any performances at all, let alone standards comparable to those of the best high school and even college athletes, for as Froes' (1997) comments clearly illustrate, the emphasis on quantifiably greater

performances will not allow us to be satisfied with such otherwise admirable efforts. In short, then, it remains unclear how the cyborgification of track and field will contribute to new techno-landscapes of liberation or co-optation.

Let who be the judge?: Narrative work and implications for journal reviewers

A few brief comments on the implications of this study for future work in narrative research in sport are appropriate at this point. First, while Polkinghorne (1995) states that narrative texts have a recognizable plot that travels in a logical and linear manner, I would argue that such a task is virtually impossible under a cyborgian paradigm because of the fractured nature of identity, as well as the inevitable twists and turns of human existence in modern technocultures. The athletes in this study see themselves as “normal” people in one context and athletes in another, and their stories are always contingent on the complex intersection between technology and other facets of their identity.

Further, I would argue that this dissertation itself is also cyborgian by virtue of its smudging of the distinctions between “academic” writing and more “literary” elements. Some may argue that the end result is a disjointed cacophony of voices, I maintain that my occasional shifts in tone, style, and voice exploit different writing practices at different times to achieve the specific aims of each given section (Richardson, 2000). Much as Picasso’s reconstruction of fractured images created potent visual texts, I hope that the various parts of this written work have a similar, though by no means comparable, effect.

Lastly, narratives raise another important issue with respect to publishing in journals within some of the fields that may find this dissertation of interest (e.g. sport sociology and sport psychology). As Sparkes (2000) notes, if one key aspect of narrative work, and other research that otherwise features stories of some kind, is the presence of a literary element, then it will be necessary to ensure that this work, when submitted to journals within sport studies, find their way to the desk of someone with a background (or at least an interest) in such material. In saying this, I am openly suggesting that this type of work will necessitate a greater emphasis on interdisciplinary ties.

Implications for agency and empowerment among athletes

While there has been little effort to connect the efforts of qualitative researchers with policy making bodies, Rist (1994) argues that there is, in fact, a potential for the forming of such relationships. As I have argued elsewhere, decisions regarding which sport technologies should be allowed or restricted have thus far been made by collaborations between bureaucratic athletic bodies such as the IOC, so-called “experts” who consistently debate over the heads of most people, and most recently state officials, in the form of the United States drug czar (Butryn, 1999b). Further, the technological stories of athletes have centered on the horrible images conjured up by the Frankenstein metaphor, as performance-enhancing drugs, the possibilities of genetic engineering, and even innovations in equipment and training methods have become associated with a dehumanized sportive monster, a mutant automaton no longer representative of what is commonly defended as the decidedly human competitor (see Hoberman, 1992).

I had hoped, perhaps idealistically, that by talking through their encounters with technology and reading their narrative accounts, the participants would feel compelled to ask further critical questions regarding these matters, and perhaps engage in dialogues with their fellow athletes. For some athletes, the interview process and the experience of reading their lifelong engagements with technology represented in narrative form seemed incredibly positive. As was evident in the narratives, there were a few times, generally at the conclusion of the final interview, when the athletes' comments suggested a new awareness of some aspect of their interactions with technology. Perhaps the most salient of such occasions is the following statement by Miguel:

I just came to the realization during this conversation that even though I started running on a cinder track with tennis shoes, I was still one of the best athletes to ever come out of this university, and I ran in two Olympic Games.

Ron also commented on how the interview process, and the subsequent reading of his transcript and narrative, allowed him to recognize and understand how relatively uncynical he was in comparison to his athletic peers. That said, I got no sense that he had any aspirations of either partaking in additional forms of technology or asking further questions of his competitors related to the power structure of his sport.

While I have argued that athletes' voices have not been adequately addressed, Lenskyj (2000) points to the existence of OATH (Olympic Advocates Together Honorably) as an example of how uncritical the athletes, as a group, really are. OATH labels itself as an athletes' advocacy group, but it completely buys into the myth of a practice free from hyper-corporatization, even as they recognize the financial benefits of sponsorship, and the transgression of the "untainted" athletic body. Further, Lenskyj

adds that the group was founded mainly by young, white athletes whose reform ideas were “palatable to generations of Olympic consumers raised on Olympic rhetoric” (p 105) While she may overstate her case in stating that OATH represents “new wine in old bottles,” she is correct in suggesting that these “progressive” athletes and former athletes still accept the notion that “pure,” which is to say less technologized, are somehow in the moral right

This brings me to an important point regarding critical work in sport studies, and the tension between reading sport critically and undermining the agency of an athlete’s own experiences There are those who might find cause to argue that, regardless of what the athletes themselves say, the hegemonic relationship between them and the dominant forces (technology included) in track and field is such that the athletes are, put simply, oppressed They may be enjoying themselves during competitions, but their emotions are derived via participation in a corrupt and unjust system that treats athletes as disposable commodities.

Now, I am by no means making the completely naive argument that the athletes in this study compete for any noble purpose, and in fact it is imperative that Tyler, Ron, and Anthony perform well in Sydney if they wish to remain sponsored by their shoe companies Few elite American athletes are financially impoverished during the prime of their careers What I am saying is that there is a terribly fine line between critically analyzing a text and disempowering those whom we presumably wish to empower by implying that they are unwitting dupes involved in an unsalvageable system where nothing positive can exist While these will be difficult waters to navigate through, I

would suggest that, at the very least, inviting participants to take an active role in the research process (e g via transcript and final text review) seems to be a small move towards a much needed democratization of the qualitative research process and a productive meeting of academics and “real world” experiences and applications

Final words

Sydney represents the cyborgian crossroads for the Olympic Games, and for the sport of elite track and field. On one hand, they will be the most technologized extravaganza ever held, and on the other hand, the notion of “pure” human competitors will make its last stand. If the efforts of the Anti-Doping Agency and other testing bodies are deemed a success, which is to say that the Games are considered untainted, then arguments for any further cyborgification using self technologies seems destined to be met with severe resistance. The technological chasm between the landscape of the sport and its participants will continue to grow, as will, perhaps, the extent to which people are willing to compromise privacy in the name of catching doped competitors. As I have already indicated, many in the athletic community, and most of the athletes in the present study, still cling to modernist notions of noble and untainted competitions. As Tyler stated matter-of-factly, “Track and field will remain forever.” Consider, as well, Hollobaugh’s (2000) recent comments regarding the frustration of wanting to declare the sport totally “clean” once and for all.

What we are left with is faith. It’s hard to enjoy a sporting event when you believe the participants are dirty. So we—and that includes myself—lean toward the assumption that they are clean. Just as all the fans for all those other sports

do In the end, if we love the sport, that's what we do I just hope we're not disappointed again

However, Lenskyj (2000) reminds us that, "Athletes participating in the Olympic industry have the capacity, depending on their own social locations, to accommodate or resist Olympic hegemony" (p 103) For Miguel, at least, who was the only Olympian at the time I conducted the interviews, there was a sense that, if it were not for his feelings of national pride, competing in a corrupt practice like the Olympics would not be worth his time As he put it, crassly but honestly, "You can't polish a turd " While Miguel's level of resistance represents a powerful and compelling personal statement, I fear that it is also a rare phenomenon

On the other hand, if the months following the Games are filled with stories of athletes who, despite the efforts of the "drug police," won medals using various banned substances (whether ingested intentionally or not), any hope of maintaining "natural" athletic bodies may have to be seriously re-evaluated if not abandoned At the risk of sounding overly pessimistic, my guess is that even with the most invasive and rigorous testing procedures, the sport, and the Olympic movement in general, will be unable to curb the use of performance-enhancing substances that are currently banned. Further, while openly cyborgified contests may be a ways off, I suspect that we will soon be forced to dispense with the veil of natural and pure athletes This is simply an anachronism that, while surely valued as a romanticized ideal, has little basis in 21st Century technocultures. First, this runs against the prevailing ethos of society, where our lives have become inextricably interwoven with technology To attempt to keep certain

forms of self-technologization out of one sphere, while seemingly necessary for the maintenance of a lusory attitude, may prove to be an idealistic task, for the ethos of elite track and field and the prevailing ethos of the larger American technoculture are always in negotiation

While I have not done so in depth here, future research must also continue to critically examine the influence of corporate interests on athletes engagements with technology, because increased opportunity for financial gain through elite performances (e g bonuses for world records, etc) will undoubtedly contribute to an increased emphasis on winning by any means for some athletes

One related point is worth making here Given the studies every Olympic year that claim a large percentage of elite track and field athletes would use any sort of self technology if they were guaranteed a gold medal, as well as the views of critical sport theorists (e g Hoberman 1992, 2000) who are adamant in their collective assertion that athletes have become walking laboratories of the sport sciences, I found myself wondering, "Why are no such views being expressed by these athletes?" It is possible that, despite my assurances of confidentiality, participants may have not been completely forthcoming during the interview sessions, and in fact were using banned self technologies or felt positively about a cyborgified Olympics This seems unlikely, however, because such engagements with technology would be, in most cases, incongruent with their other stories of technologization throughout their lives Given the history of positive tests by athletes who had vehemently denied using any banned

substances, though, it is important to resist adopting an overly naive attitude towards this issue.

In conclusion, the results of this study issue a challenge and an invitation to sport researchers concerned with the intersection of athletes and technology and the future of sporting contests in the 21st century. While scholars may debate amongst themselves what “human” athletes will eventually evolve into, it is only through engaging with the athletes and the governing bodies themselves that a truly open and democratic discourse will emerge. As the narratives presented here demonstrate, there is an overall lack of such a discourse within the athletic community.

Elite athletes in every sport may choose to genetically alter themselves in the next decade, for any number of reasons, but issues of control and access to such practices must be sorted out *beforehand*, for I agree with Gelberg’s (1998) assertion that once technologies are introduced into the sporting sphere, those with a vested interest in them will work to avoid critical analyses of the impacts of these technologies. Furthermore, as the narratives in this study showed, it is painfully difficult to sort out what sorts of boundary transgressions count as meaningful performance in sport when every new innovation renders these boundaries, despite essentialist claims otherwise, completely useless.

Of course, many athletes will be content with their current level of cyborgification, and accept their place in the lower divisions of competitions. In his forthcoming book, Cyborg citizens: Politics in the posthuman age (2001), cyborg theorist Chris Hables Gray offers similar sentiments.

Maybe there will be a whole range of competitions for athletes, from the disabled, through the “normal,” to the heavily cyborged, just as there are age competitions now. Or perhaps our fascination and love for athletics will focus even more on what we do ourselves and less and less on the genetically unusual and heavily modified performers that now dominate professional spectator sports.

Whatever the case, I am certain of one thing. Regardless of one’s level of engagement with technology, NBA players will still miss free throws, sprinters will still pull muscles, pole vaulters will still unexpectedly miss their opening heights, and so on. In considering the infinite permutations of cyborg athletes, it must never be forgotten that, because humans are imperfect creatures, any cyborg will inevitably carry at least a trace of good old human error. Maybe, just maybe, this will be the saving grace of sport.

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APPENDICES

Appendix A

Interview Guide

- * I'd like to start by asking you to tell me about your childhood?
 - where you were born and raised?
 - what was family life like?
 - what kinds of activities did you do? (alone and together?)
 - your school? (activities, facilities, neighborhood?)
- * What can you tell me about your experiences with different sorts of technology growing up?
 - how did it feel to engage with technology? (specific instance?)
 - were there any kinds of technology or devices that you desired but never had?
 - were you aware of any larger technologies in society? (E g space travel, military, transportation, communication etc.)
- * What comes to mind when you hear the term "technology"?
- * How do you see your body in relationship to technology?
 - were you ever hospitalized growing up?
 - have you had any surgeries?
- * Is there anything else you'd like to add at this point related to technology, and your experiences of and with technology growing up?

- * Talk to me about your sport, track and field?
 - talk, if you would, about your specific event?
 - what does your sport and event mean to you? (motivation, identity ?)
 - how important is improved performance for you?
 - describe your training and competition routines?
- * What kinds of technology are present in your sport?
 - your event?
 - talk about some of the newest innovations in your sport/event?
 - are there any technologies you use now that you didn't previously?
- * How large a role do you feel technology plays in your sport?
your event?
 - are there any technologies you would like to see improved?
 - are there any technologies you think play too large a role?

- * How do you view your body in the context of your sport?
 - How far would you go to technologize your body?
- * What has this conversation been like for you?
 - was it revealing in any way?
- * Is there anything else you'd like to add about technology and your experiences with technology in your sport?

Appendix B

Informed Consent Form

Technological Narratives of Elite Track and Field Athletes

The purpose of this study is to examine elite track and field athletes' interactions and experiences with technology in an effort to better understand the role of technology in elite track and field, and sport in general. The results of this study may also contribute to debates over the use and restriction of various sport technologies by providing new insight into how athletes perceive policies designed to allow or restrict certain technologies. Although there are no direct benefits to you, the knowledge gained from this study may help further illuminate the role of technology in your athletic and non-athletic life, and provide a new perspective on how you experience various sport technologies. The individual interview should take approximately one to three hours to complete, and the group interview should last approximately one hour. Your responses during the interviews will be kept confidential. Both interviews will be audiotaped to allow me to transcribe the interviews, and the group interview will be videotaped so that participants' voices may be easily distinguishable. Neither transcribed interview will include your real name, so no one other than myself will be able to identify you from this research. Confidentiality during the group interview cannot be guaranteed because of the other participants involved, and the videotaping of the interview itself. However, all efforts will be made to maintain confidentiality during the group interview. The audiotaped interview and videotaped interview will be maintained in a locked file cabinet in 344 HPER at the University of Tennessee, Knoxville until June of 2000, at which time they will be destroyed. The consent form will be stored in the same location for three years past the completion of the study.

There are no anticipated risks or discomforts anticipated during this interview. You are free to discontinue participation at any time without penalty or prejudice towards you.

If you have any questions concerning this research at any time, you may contact me (Ted M. Butryn) in the Graduate Assistants' office (HPER 144) at 974-8768, or via electronic mail at <tbutryn@utk.edu>

Thank you for your participation.

I have read the above and I agree to participate in this study.

Name (Please print)

Signature

Date

Principal Investigator

Signature

Date

Appendix C

Transcript Review Form

Dear track and field participant

I hope your outdoor season is going well so far. I know this is an exciting and busy time for you.

Enclosed please find a copy of our interview transcript of your technological life history. Prior to beginning work on the final narratives, I would greatly appreciate it if you could review the transcript and make any additional comments that would make the descriptions of your life, and the role of technology in it, more detailed and complete. If there are phrases in the transcript that are highlighted in bold print, I would especially like additional feedback on that particular issue. Also, if there are any other stories or relevant information you have remembered since the last interview, please feel free to write on the enclosed paper, or call me to set up a very brief follow-up interview. Finally, please indicate at the top of your transcript the code name you would like to be referred to in the final study, so that I will be better able to help ensure confidentiality.

After I receive your feedback I will begin the process of constructing your technological narrative, a sort of personal biography with special attention to how you have interacted with technology throughout your life. Please return the transcripts to me as soon as possible in my box in HPER 322. For those of you less familiar with campus, HPER is the building where the interviews were conducted.

Thanks again for your help and cooperation on this project. I look forward to sharing the final version of your narrative soon. I will also be in contact to set up the best possible time for the 20-30 minute group interview. Take care, stay healthy, and good luck!

Sincerely,

Ted M. Butryn
phone 525-2646
e-mail tbutryn@utk.edu

Appendix D

Participant Feedback Form

Dear _____

I hope this finds you well. Enclosed you will find the final version of your technological life history narrative. As with the transcripts of our interview, I would like you to read this carefully, making note of any thoughts you have regarding any aspect of your story. If there is any part of the narrative that, for whatever reason, you have questions about, please feel free to call or e-mail me at any time. Again, part of the purpose of this study is to allow you to tell your stories of technology, and in the process hopefully attain a better understanding of your experiences with technology at various times in your life.

I want to thank you again for your willingness to participate in this study, and your cooperation throughout the entire process. Above all, I hope that you enjoy reading your narrative, and that it provides new insight into your engagements with technology, as well as times when you resisted various technologies. When you have finished reading, please return the text to room 322 in the HPER building. If this is not convenient, you can send me any feedback you have via e-mail, or you can leave me a phone message telling me a time when we might talk by phone. Because of time constraints, e-mail or telephone (my bill) may actually be best. Whatever the case, I would like to hear what you think.

Thanks and stay healthy,

Ted M Butryn
e-mail tbutryn1@email.sjsu.edu
phone (408) 924-3068

Vita

Ted M Butryn was born in Jamestown, New York on July 8, 1971. He graduated from Jamestown High School in 1989, and entered the University of Tennessee that fall. He ran track and cross-country for the Volunteers for three years, and graduated with a major in Movement Science (emphasis in sport psychology) in 1993. In 1997, Ted earned a Master's of Science degree in Human Performance, with an emphasis in societal studies, from San Jose State University. Ted then returned to the University of Tennessee in the spring of 1998 to begin work on a doctoral degree. He developed and taught a course entitled "Stress Management," and during his final year he served as a volunteer sport psychology consultant to the men's cross-country team. Ted received a Doctor of Philosophy degree in Education, with concentrations in Sport Psychology and Cultural Studies, in December 2000.