SPORT, ETHICS AND TECHNOLOGY

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ABSTRACT

The continuing bans placed on the use of certain performance-enhancing substances by athletes would indicate that not all technological and scientific developments may be appropriate or beneficial in elite level sport. Issues that have arisen out of the drug bans form the basis of 'Sport, Ethics and Technology'. This study is essentially a philosophical examination of the nature and significance of the relationship between high performance sport and technology. As the title implies, the relationship is assessed from an ethical perspective with the intention of providing certain normative criteria from which we may assess the appropriateness or inappropriateness of certain technological applications in elite level sport.

Chapter One (Introduction) states the problem and introduces the issues that will be covered within each chapter. It briefly explains why the relationship between sport and technology is particularly significant since sport may be seen as representative of a range of other pursuits pursued for their own sake.

Chapter Two (Technology) deals specifically with the subject of technology, providing an historical overview of its development from what are considered to be its origins through to contemporary times. In dealing with technology first, the intention was to provide the setting in which the technology-sport relationship exists and to show reasons for their close links.

Chapter Three (Personhood and the Good Life) discusses the moral philosophies of Aristotle and Kant. Their moral philosophies are used to then establish an ethical framework within which certain normative criteria may be underpinned. These particular normative criteria are employed within chapter four to assess the ethical implications of the relationship between sport and technology.

Chapter Four (Sport) examines the significance and the nature of the role of technology in sport. It uses specific examples of technological or scientific applications and then using the normative criteria formulated in chapter three, argues why certain uses of technology may be deemed inappropriate. It outlines previous arguments forwarded for

the proscription of performance-enhancing substances, highlights the inconsistencies in these arguments and offers new arguments based on respect for virtues, personhood, and all phenomena considered to be ends-in-themselves.

Chapter Five (Conclusion) suggests the need for greater reflection and consideration of both the present and future uses of technologies. It warns against the consequences of not only environmental destruction but of potential spiritual decay if we continue to pursue a course of technological determinism. It suggest a reappraisal of what it is we value in focal practices such as sport and that we should endeavour to protect the sacrosanctity of all phenomena considered to be ends-in-themselves.

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For Terry

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CHAPTER I

INTRODUCTION

The ideals of contemporary industrialised societies are imbued with the notion of progress, success, and achievement. One of the tenets of technological progress is that we should be attempting to achieve the greatest good for the maximum number of people, using the most efficient means possible. Advocates of progressive technological developments stress the achievement of this greater human good. Whilst it cannot be denied that technology has certainly provided us with material achievements enabling an easier existence for many, the term 'good' in this instance has a materialistic interpretation. However, is our understanding of the 'greater good' limited to material production and consumption? The issue of precisely what constitutes the 'greater good' is open to question and depends on the value system of a particular society at a particular time.

Technological optimism has attracted, until recent years, little critical analysis or reflection. Perhaps this was due to a tendency to equate progress with an increased standard of living. Currently, much ethical debate focuses upon certain uses of technology (e.g. nuclear armaments, genetic engineering, drug use in sport), that are deemed inappropriate because it is believed that they threaten human existence and have potentially irreversible consequences. This study specifically examines the relationship between elite level sport and technology and assesses the ethical implications of particular technological applications. It also examines the ends these technologies serve and whether they threaten or compromise human values in any way.

The ability of technology to accommodate or contribute to the sensuous, sentient and intrinsic fulfilment of life will be discussed in relation to a number of areas in which technology has played an increasing role such as in medicine, fine art and sport. To assess whether these technologies may be considered humanistic or mechanisitic, certain normative criteria based on the moral philosophies of Kant and Aristotle will be employed. Their moral philosophies are particularly relevant within this study since they are still appropriate in the present day and they provide a clear understanding of what it means to value something or someone as an end-in-itself. When we understand both why and what it is we value as ends-in-themselves we are in a better position to

evaluate the relationship between technology and sport, since sport in this study is considered to be something which can be valued as an end-in-itself.

Part of technology's promise is to disburden and liberate humankind from hunger, disease, inconvenience and laborious work routines. However, if technology supposedly enriches our lives by liberating us to pursue leisure and recreational interests, the question may be raised why technology is being applied to those things it is supposed to liberate us to do such as sport, fine arts, music, or the simple pleasures of preparing and sharing a meal. This study considers ways in which technology may enhance, and conversely ways that it may detract from experiences that provide fulfilment and self-realisation. It will be argued further that although technology may allow for vicarious experiences (whether through television or virtual reality technologies, for instance), it is the 'real' experience, the actual involvement in an activity or practice, that moves us in a unique way. This is partly why we value the intrinsic worth of the activity.

This research will be looking specifically at high performance sport since it can be understood as representative of other human pursuits through, or in which, we are liberated. It could be argued that sport is one of the most visible, accessible and popular human pursuits. High performance sport is a particularly useful arena in which to study the issue of the appropriateness of technological applications. Technological and scientific applications, although not only operative in *this* arena, are certainly manifested and visible here in very clear ways. Science and technology have created specialisation and atomisation within elite level sport, evident in the employment of sports psychologists, sports medicine scientists, physiologists and biomechanists. Also, whilst many other human pursuits have undergone technological applications, sport is more of a concern because technology is applied not only to various sports but directly to athletes themselves.

Technology's principle of increasing levels of demand and output is paralleled with the 'performance principle' of high level sport. That is, increased or improved athletic output is realised in progressive record breaking performances. This study addresses a concern that technology's focus on the 'end' may be detrimental to practices such as sport. Although the 'end'- the sporting victory- is of course important, reasons for engagement in a particular sport are primarily concerned with the actual 'doing'. In this thesis it will be argued that, with regards to the sport-technology relationship, the

motivations underlying the pursuit of new technological developments are not always compatible with the motivations underlying the pursuit of a sporting victory. This argument is based on the claim that winning, or the sporting victory, is an internal good of a mutual quest for excellence in competition. The development of new technologies is a means-to-an-end while participation in an activity such as sport is perceived to be an end-in-itself. It will be explained later in this thesis how these two concepts of a means-to-an-end and an end-in-itself are quite different and distinct. It will be argued that if, in practices such as sport, we concentrate only on the 'end', we may demean the actual process - the involvement or engagement - which gives human pursuits their real meaning and intrinsic value.

To attempt to further understand the nature and significance of the sport-technology relationship, it is necessary to distinguish what it is we value in practices and human existence. If we can articulate what it is we believe is threatened by certain technologies, the ethical dilemmas created by issues such as drug use in sport will become more apparent. One of the more pressing ethical issues is the direct application of technology to athletes. A fear is that technology is not only being applied to what one does but to what one *is* and that high performance sport may be used as a legitimation of the 'technologising' of human beings. This has ethical implications if the autonomy of individuals and respect for persons are threatened.

Also examined in this study is the question whether better performance may be considered a true representation of *human* potential when it is reliant on external factors such as technology. Does the high-tech athletic experience engage the athlete as a rational, free and autonomous agent? Does technology 'disengage' the athlete from the experience or does it provide for an enhanced athletic experience? How *does* the technologizing of not only sports but the athletes themselves actually coalesce with the notion of sport as an activity that is intrinsically fulfilling, pursued as an end-in-itself and which contributes to a 'better life'- the 'well-lived' life (in Aristotelian terms)? It is the intention of this thesis to explore these questions and the implications of mechanistic and humanistic uses of technology within elite level sport.

This study investigates reasons for the continued pursuit of technology, our current technological reality, and possible future consequences of a technological determinism. It questions human objectives in the technological drive and how technological progress

may be considered compatible or even synonomous with enlightened action and self-fulfilment. In considering limits to technological developments, it is also questioned whether our technological optimism has transgressed into technological determinism. The potential ill consequences of unreflective technological progress, especially upon phenomena valued as ends-in-themselves such as sports practices, will highlight the need for a more cautious and philosophical approach towards new technological developments.

Chapter two presents an historical and conceptual account of technology. This provides the setting in which the sport-technology issues arise. An overview of technology's progress from its earliest origins as 'technics' to its current role will demonstrate the extent of its influence on our lives. The rise of a scientific instrumentalist rationality takes us from the eighteenth century quest for domination over nature via scientific progress to the current socio-economic context in which we define our needs. An investigation into our current 'sensate' culture and values system will highlight our acceptance of, and increasing reliance upon, a reality dominated by technology. This includes a discussion of the progression from primarily 'doing' societies that highly valued activities such as politics, the arts and contemplation, to contemporary 'making' societies' which are driven by production and consumption.

Although this thesis centres its discussion around technology, acknowledgment must be given to the socio-economic context in which new technologies are created and applied. Technology as a phenomenon cannot be critiqued in isolation from other phenomena it is connected to such as capitalism, instrumentalism and a scientific rationality. These phenomena share a co-dependent relationship which is founded on the ideals of progress within industrialised capitalist societies. However, it is not the intention here to examine or critique capitalism per se, but to specifically examine certain technologies and their effects. The advent of a scientific-instrumentalist rationality and the role of capitalism and economic progress are addressed, albeit briefly, in order to better understand the role of technologies particularly in elite level sport. It is also important to note that it is not technologies that are considered inherently dangerous, but the values underlying their development and subsequent applications.

The seductiveness of a technological reality has been referred to as the 'promise of technology' by Albert Borgmann (13). The term 'promise' is quite apt since it implies

that technological progress has offered us something positive or desirable. A brief descriptive account is given of the relationship between the 'promise' of technology and ideas of limited progress. Whether this promise has been fulfilled is debatable and it is suggested in this study that the search for personal fulfilment appears to have become oriented towards consumption activities. How we arrived at the point whereby we continue to pursue technological progress well beyond the consideration and fulfilment of basic human needs is considered. It is later argued that the drive to seek fulfilment in the consumption of commodities undermines activities which provide for human engagement and fulfilment.

Certain negative consequences of technological developments are outlined in chapter two. It is argued that we create further technologies to remedy problems caused by current technologies, hence the catch-phrase - 'technological fix'. It is claimed by a number of authors (31: p. 104) that technology is out of control and has become autonomous. However, is it possible for technology to pursue its own course of action or is it always necessarily controlled by human thought and action? These kinds of questions provide a setting for raising ethical issues concerning the appropriateness of certain technological applications.

In chapter three an ethical framework is established using the moral philosophies of Kant and Aristotle. These ethics are used to establish the normative criteria for assessing claims that certain technological applications in sport are dehumanising. The topics of means and ends, values, morality, categorical imperatives and respect for persons are included in the discussion of normative criteria. Chapter three takes up certain ethical issues including choice, freedom, autonomy, alienation and neutrality within a technological reality to provide a critical analysis of the hegemony of scientific-technological instrumental rationality. The subject of technological ends will illustrate how our sensate reality is one in which the universe is regarded and treated as a mechanical system for which scientific methods are considered the only valid approach to seeking truth and knowledge. In more recent years anthropocentrism has generated much debate concerning the consequences of technological developments upon both humanity and the environment. The belief that economic and technological growth allow for unlimited material progress has been at great cost to the environment and, it is argued here, to some other dominant values.

In chapter three Albert Borgmann's concept of 'focal practices' is discussed. His notion of focal practices provides a basis for understanding those activities pursued as ends-in-themselves (that is, valued for their intrinsic worth and not treated purely as a means-to-an-end). Central to this discussion is an explanation of internal and external goods. It will be argued that it is irrational to participate in an activity primarily for the external goods (such as wealth or fame) since our rationality requires us to value and treat with respect those things we value as ends-in-themselves (and to exercise rationality in this way is to experience internal goods). Thus, when an activity is undertaken primarily for external goods it cannot be considered a focal practice, as defined by Borgmann. The distinction between internal and external goods will also illustrate the different motivations people have for participating in focal practices such as sport. An account of focal practices is essential to providing an understanding of the way sport (representative of other focal practices) provides for the exercise of our rationality, self-actualisation and fulfilment of human potential and the pursuit of a greater good for the community.

Chapter four moves on to the role of technology in high performance sport. Particular uses of science and technology in sport are reviewed. Three issues in particular: genetic engineering, prohibited drugs-use in sport, and certain sports psychology practices are used to demonstrate what may be considered inappropriate uses of technology in sport. These technologies are evaluated using the normative criteria established in chapter three. It will be argued that they constitute inappropriate uses of technology if the athlete is treated as a mere means to winning and an object of experimentation. Arguments forwarded are based predominantly on the respect for persons and ends-in-themselves proposal. Finally, the implications of these applications are explored and a number of proposals for counteracting the detrimental effects these technologies have had upon sport are considered. The consequences of the continued technologisation of high-level sport and athletes will be addressed taking account of the implications for the larger social setting.

The final chapter summarises the issues that have been raised. It will emphasise the need for alternative approaches to the current one of unrestrained and unreflective technological development and application. It will stress re-appraisal, reflection and ethical deliberation on technological matters concerning sport. One implication of this study for the understanding of appropriate technology is to appreciate and enjoy simpler

pursuits such as 'play', and other activities practised as ends-in-themselves that do not necessarily need to fall under the influence of technology.

CHAPTER II

TECHNOLOGY

The main purpose of this chapter is to outline the rise of our 'technological culture' and to examine technology's influences on the dominant values system of industrialised capitalist societies. Firstly, an account of technology is presented which spans pre-modern to contemporary Western industrialised societies. This descriptive historical overview traces the origins of the first primitive technologies through to present day. Different periods of developing technology and science are outlined using the framework provided by Sorokin (93) and the value-systems that Sorokin claims operate throughout these periods. The intention is to provide a context in which to assess ways technology has shaped our work, leisure and social values, particularly within this century, and to question reasons underlying the 'push' for further technological developments. This historical framework will examine the shift from practical reason to the hegemony of a scientific rationality, attributing increasing significance to scientific discoveries.

Two main considerations here are the reasons underlying continual technological progress, and the ways in which technology has influenced human values and living. These issues necessarily involve the question of what may be considered appropriate or inappropriate uses of technology. To illustrate the arguments of both technology's critics and its supporters, three areas which are increasingly applying technology- fine art, medicine and sport, will be explored.

A major theme to be addressed here is the challenges which progressive technological developments pose to Western values such as autonomy and freedom of the individual. A concern is that we may have become so dependent upon technology that we find difficulty stepping outside it so that we may balance it with other non-technological values and ways of living. Other ways of living and non-technological values will be discussed and defended as a counterpoise to technological ones.

Technology: An Historical Overview

Technology is frequently conceived of as a phenomenon of the 19th and 20th centuries. Its origins, however, lay in pre-modern 'technics'. The word 'technics' derives from the

Greek word 'techne' which itself is traced back to the Indo-European root 'teks', which means to weave or fabricate (104: p. 12). 'Techne' was the ancient form of technology involving handcrafted utensils and tools. Concerned as much with aesthetics as with functionality, it made no distinction between art and utilitarian production (74: p. 80; 30: p. 322). Hood states that the meaning and value of technics is to be found in the purposes which they serve even if these are non-utilitarian purposes such as those of primitive technics, e.g. dance, rituals, music, body ornamentation and magic (51: p. 348).

In considering whether humans should rightfully be defined as Homo Faber (tool-maker) or Homo Sapien (mind-maker), Mumford points out that the technics employed in ceremonial rituals long preceeded the mechanical technics found in work. Also, the organisation of labour tasks came first through specialisation in ceremonial offices (74: p. 79). He believes that the development of humankind as Homo Sapiens progressed not from tool-use but from significant modes of symbolic expression. In its original form, technics was not merely production-centered; it involved a holistic perception of humankind (74: p. 81). Activities such as politics and philosophy (which were not production-oriented pursuits) were considered to be the means for perfecting human nature since they were undertaken for their own sake rather than for utilitarian purposes (51: p. 349). According to Mumford there is widespread evidence that shows that primitive symbolic expressions through language, dance and art (paintings) were much more refined and perfected than tool-use (74: p. 79). Yet, it is interesting to note that the pre-civilised stages of humankind, such as the Stone-Age and the Bronze-Age, are categorised with exclusive reference to their tool-use.

A number of authors have delineated certain historical periods in which to discuss the progress of technology. Jose Ortega y Gasset outlines three main periods of nascent technology (77: p. 307). Nature was important in each of these periods but was understood and related to in different ways. The first period was the technology of 'chance' in which, in the culture of primitive peoples, nature was of primary importance. In this first period, technics was closely tied to religion and magic. This was a symbolic appropriation of nature. The second period was that of craftspersons or artisans. Since they usually grew or produced the materials required for their craft, craftspersons still shared a close relationship with nature. Although using more advanced skills and

technics, they still only used hand held tools. The technology of the third period (modern day) is characterised by the primacy of science, which has allowed humankind to challenge nature. This is the technical period whereby humans no longer merely adapt to and exist in a counter-balance with nature but attempt to "...outwit and manipulate nature" (24: p. 18).

Similarly, Mumford's classification of "mono-technics" and "bio-technics" draws a clear distinction between ancient and modern technologies (30: p. 322). Fundamentally, bio-technics (or poly-technics) was a life-oriented form of making concerned with the preservation of traditional skills and craftsmanship. Conversely, mono-technics is based upon scientific knowledge, quantified production, power and economic expansion. Through the mono-technics of modern technology, 'making', especially in the form of skilled hand-crafting, has been transformed into 'processing' and subsequently the production of mass-produced objects (30: p. 323).

Benson and Lloyd have distinguished what they refer to as three scientific-technical revolutions. The first, that of the 15th-17th centuries, is represented by the discovery of the method of science and was primarily concerned with objective, natural laws. The second, being the Industrial Revolution of the 18th and 19th centuries, dealt with 'applied' science. The third is the modern day revolution - the collaboration between science and technology (10: p. 17).

Ellul, a critic of technology, believes that the search in the 18th century to know and exploit nature has materialised in the 20th century into a seemingly inconclusive task of controlling nature and humankind by scientific-technological means (31: pp. 43-45). He states that "...only the greatest refinement resulting from scientific progress differentiates the modern technical operation from the primitive one" (31: p. 19). The engineering methods, architectural designs and cybernetics employed in contemporary societies are just a few of many techniques that he defines as 'methods of operation'. Techniques exist in all human activities including dance, sport, personal grooming, writing, politics, education and prayer (30: p. 309). "...technique is nothing more than means and the ensemble of means.... Our civilization is first and foremost a civilization of means" (31: p. 19).

Ellul outlines three kinds of technique: economic technique, the technique of organization, and human technique. Medicine, media, education and publicity are examples of the latter (31: p. 22). According to Ellul, technique is characterised by its quest for efficiency and the mechanisation of whatever it encounters; this is its one ordering principle. It creates its own laws, those concerned with viable economic efficiency and output (31: pp. 19, 20, 22, 97, 134). Furthermore, Ellul believes that modern society is premised purely upon technical considerations. Such claims raise questions regarding the relationship between the efficient action of modern techniques and what may be considered truly *human* action (30: p. 312). Efficient ordering, maximum production and output of identical objects are not concerned, for instance, with the aesthetics of skilled craftwork. Whereas craftworkers reflected upon and put their personal creative signature upon their work, today's technicians are largely restricted to supervisory roles over machinery. Previously, tools had been the extension of people. However, during the Industrial Revolution, workers became mere extensions of machines as steam and water power replaced human power (86: p. 16). Today, the latest technological equipment is able to replace human brain-power (information technologies). Mumford, who is in accord with Ellul, states:

> The deliberate expression and fulfilment of human potentialities require a quite different approach from that bent solely on the control of natural forces and the modification of human capabilities in order to facilitate and expand the system of control. (74: p. 85)

A shift in social values (e.g., the Protestant work ethic) transpired with the changes technology brought to people's work and social relationships. With the growth of scientific discoveries and labour saving technologies, reality came to be perceived more and more from the perspective of a scientific-instrumental rationality. Thus, there was a shift in social values from non-instrumental to instrumental; from living in a balance with, and respect of nature to the desire to control nature, and a predilection for efficiency and production over craftsmanship.

The Hegemony of Scientific-Instrumental Rationality

In pre-modern society, reality was perceived holistically. In this era contemplation, religion, and the arts were highly valued (60: p. 108). Intellectual activities were more

of a philosophical and religious nature, and technical action was subordinate to these forms of knowledge. The perception of reality at that time was significantly different to the way reality came to be perceived in modern times. As the emerging sciences expanded knowledge about the material world, philosophical questions of 'why' or 'what' became overshadowed by the technical question of 'how' (3: p. 29).

Instrumental rationality of a scientific kind emphasises quantification and objectification in the quest for knowledge. One consequence of this however is a de-emphasis of hermeneutic and critical social sciences that could provide a basis for questioning the values of such instrumental reason (68: p. 53). On the subject of values, Rapp says that we have experienced a shift of faith, that is, a shift from a spiritually based faith in a heavenly hereafter to a faith in technological progress (84: p. 167). It marks a move away from a metaphysical appreciation to an increased physical understanding and control of nature. This transition can also be understood through Sorokin's (94) study of changes in social systems. Sorokin's 'culture types' are useful because they provide an analysis of the value systems operative during certain stages of history.

Sorokin distinguishes two major types of culture: 'ideational' and 'sensate'. He differentiates these cultural types or periods according to the following criteria: 1) the nature of reality 2) the nature of the needs and ends to be satisfied 3) the extent to which these needs and ends are satisfied, and 4) the methods of satisfaction (94: p. 25). Within ideational culture (operative in the Middle Ages) social life was guided by ideals of faith and salvation. Reality was perceived as non-material; human needs and ends had a spiritual point of reference. In the ascetic, ideational culture, there was a strong emphasis on moral order and permanent values which emphasised control of one's emotions, feelings and desires. Aesthetic value was also regarded highly; the various styles of art forms were significant and valued for their embodiment of spiritual or sublime meanings and values.

Our current culture, according to Sorokin, is that of the active sensate mentality. In modern sensate culture, our material and natural worlds are predominantly seen in terms of their potential usefulness for our existence. In previous times humankind existed in a more balanced relationship with nature, respecting it whilst also relying upon it for species preservation. In direct contrast to the ideational mentality, sensate reality is perceived as a milieu in which the satisfaction of sensual bodily needs is foremost.

Aesthetic value also occupies a lesser role in favour of those means that bring hedonistic enjoyment and satisfaction (94: pp. 34-35). The methods of satisfaction employed are the "...most efficient modification, adjustment, readjustment, reconstruction of the external milieu" (94: p. 28).

Our needs are increasingly oriented towards commodities in an attempt to gain maximum satisfaction. But these are usually physical, sensual needs. The purely sensual needs are those like food, thirst, shelter, and sex. Individuals have become oblivious to the distinction between needs and false needs. False needs are those that are externally created by market forces. They are created out of an expectation to conform to current trends and tastes, such as a need for the latest technological conveniences or commodities (82: p. 4). In today's society the large-scale investments in technological innovations ensure the utilisation of available resources that provide for our current levels of material comfort (60: p. 7). Whilst these technological inventions may allow for 'action' in the sense of wealth acquisition, they de-emphasise other means for action of a more personal, creative and non-material nature. When we focus only on sensual needs, we may neglect our spiritual needs. Leiss says that it is these latter needs that define the uniquely human condition and are the proper ideals to which an individual should aspire (60: p. 56). Thus, whereas the ideational mentality emphasised self-control, the sensate mentality stresses control of the external world via a scientific rationality.

There are two major concerns with the hegemony of a scientific rationality. The first, alluded to above in the description of sensate mentality, is the kind of values that lie behind scientific inquiry and the increasing control and power that we have attained over nature through technological intervention. The second concern is that our technical consciousness, rooted in rationality and objectivity, gives greater status to technically applied knowledge than to other forms of knowledge.

In relation to these concerns Leiss (60; 61) and Aronowitz (5) have both expressed fears that technologies can be used detrimentally as a means of power. Aronowitz claims that scientific rationality, obeying the 'power imperative', imposes a 'logic of domination' not only on nature but on humankind itself (5: pp. 5-6). Along the same lines, Leiss states that with our superior technological capabilities, the meaning of 'domination of nature' is that "...some men attempt to dominate and control other men" (61: p. 131). These

authors see the logic of a scientific rationality grounded in the hierarchical structure of society. On this topic, Heinz Luegenbiehl (64) in his paper "1984 and the Power of Technology" presents what he believes to be some common misconceptions about George Orwell's novel 1984. He says that the novel was not an attempt to predict a new 'future' society, but was centered on the theme of the control of human thought and behaviour (64: p. 293). It was primarily a warning against the abuses of power.

Such concerns may not be without foundation. It is only in recent years, for instance, that we have been forced to recognise the serious problems that arise when we perceive nature purely from a utilitarian perspective and continue to treat the environment as an unlimited resource for our needs and a dumping ground for our wastes. With regards to the hegemony of a scientific rationality allowing increased control of nature, Leiss believes that we are being presumptuous if we think that such technical interventions are themselves under rational control (60: p. 38). An increase in knowledge can also be coupled with a corresponding *lack of* knowledge. This has been demonstrated in technological disasters in which the consequences of implementing certain technologies could not be foreseen. DDT, for example, was used to save millions of lives in countries where malaria-carrying mosquitoes existed. An unanticipated consequence of the use of these DDT sprays was a chemical buildup in the food chain ending up in the shell glands of birds causing heavy bird mortality (95: p. 56).

Another issue that has incited much philosophical debate is genetic engineering. It is seen as the attempt to gain certain control over the natural life processes. This kind of technology undoubtedly has benefits in that it is able to remedy certain genetically transmitted birth defects. The fear, though, is that it could be misused to create a specific human type allowing doctors to 'play God.' When used in this way technology is not concerned with relieving or correcting inconvenience or discomfort caused by genetically transmitted diseases or disabilities. Fundamentally, the issue is what kind of values and what rationale drive the desire to use technology in such ways? This is to ask the implicitly moral question: 'How does this kind of application of technology contribute overall to the 'good' of human life?'

Instrumental reason is a means for increasing our knowledge through objectification and quantification. Practical reason, on the other hand, for Kant, centered on the autonomy of the individual who existed within an established moral order (84: p. 131). Practical

reason is inherently tied with questions about values and moral conduct. Critical of scientific rationality, Taviss claims that instrumental reason involves a subjugation, if not a complete suspension, of value questions in its quest to manipulate reality (96: p. 8). Our current cultural attitude places much emphasis upon the cognitive domain of human existence. According to Aronowitz, the end of practical reason began with the Enlightenment period when nature, treated as an object, was given expression in quantitative terms (5: p. 7).

Taviss asks how a language based on scientific results and statistical formulae can accommodate or provide for the practical knowledge that is gained from the subjective experiences and insights of our affective and emotional domains (96: p. 9). Similarly, Arendt says that what we experience makes sense only when we speak about it (3: p. 4). She believes that the language of the technicians and scientists is inadequate to express distinctly human life. If practical knowledge, most aptly expressed in literature, is trivialised then speech itself may no longer be as meaningful as it used to be (3: p. 4). She questions whether mathematical formulae are able to provide for the expression of human passion or exultation, or experiences of death or birth. As cited by Taviss, Huxley stated that:

> The world with which Literature deals is the world in which human beings are born and live and finally die; the world in which they love and hate, in which they experience triumph and humiliation, hope and despair; the world of sufferings and enjoyments, of madness and common sense, of silliness, cunning and wisdom; the world of social pressures and individual impulse, of reason against passion, of instincts and conventions, of shared language and unsharable feelings and sensations ... (9: p. 8)

It is possible that when phenomenological descriptions of human actions are replaced by predominantly technical descriptions, certain intrinsic qualities, unique in an arcane way to those particular actions, may be ignored or de-valued. The problem is that not all human actions and motivations can be reduced to principles of functionality, utility or objectivity. A discussion of the *meaning* of technical actions requires the language of literature in order to reflect upon values and potential effects of technological and scientific discoveries. Language, such as is used in literature, is that which expresses our emotions, beliefs, and spirituality. Mathematical symbols, computer terminology and scientific language have become the mediators of technical knowledge and technology mediates our relationship to nature (45: pp. 40, 211; 84: p. 3). The intrinsic

worth of individual experiences and the symbolism interned within the various art forms and nature, is ignored if knowledge is only considered significant when expressed in the practical results of technical accomplishments (3: p. 4; 40: p. 52).

Undoubtedly, our modern consciousness has been decisively influenced by the world view of scientists and technicians. What has inveigled us into this technological consciousness and life world? To understand why technology has become so firmly entrenched in daily life it is necessary to examine what it is that we believe technology offers us. This involves examining the 'promise of technology'. The changes that have occurred in our work and leisure due to technological developments are a result of our confidence in and acceptance of a scientific rationality and our belief that technology offers a better life. In the next section it is argued that the 'promise' of technology, whilst increasing our material comfort, has become misguided and has had certain negative consequences for our work and leisure.

The Promise of Technology

The promise of technology envisioned at the beginning of the modern era was to liberate humans from disease, hunger and laborious tasks with an intent towards pursuing learning, sport and the arts (13: pp. 35-36). Ortega y Gasset says that the function of technology is to release humans to pursue tasks and practices that provide for their 'being'. He views technology as "the improvement brought about in nature by man for the satisfaction of his necessities" (77: p. 292). Technologies have allowed us to alter and utilise our natural surrounds to maximise the supply of goods available to release humans from discomfort and inconvenience. In their earlier form, technological advancements enhanced human development by satisfying material needs and promoting freedom for the pursuit of activities (considered to be ends-in-themselves) for intrinsic growth and fulfilment (45: p. 39; 60: p. 38). Whereas slaves were the traditional means of liberating certain classes from laborious tasks, machines were regarded as the modern means of emancipation. This 'promise' of technology has produced certain consequences for both our work and leisure time.

Many traditional occupations such as tilling, ploughing, weaving, cooking, tool-making and blacksmithing, which constituted much of human existence under 'natural' circumstances, have been made redundant by technological innovations. However,

many laborious and dull tasks have also been eliminated by technologies that have changed work routines and environments (77: p. 296). The mechanisation of production for instance has meant that machines are able to perform with greater efficiency and accuracy the many boring jobs previously carried out by humans. However, one reservation about the invention and implementation of progressive technologies is that complete automation may also eliminate any possibilities of individual creative expression within the work environment. It is no secret that increasing technological intervention of human activity in the workplace has resulted in the transformation of much creative work. As early as 1806 when Edmund Cartwright revolutionised the textile industry with the power loom, skilled workers were replaced with workers who merely kept the machinery operating (83: p. 41).

Besides eliminating some types of work, technology can also produce alienation. Workers may experience alienation when they interact with machines rather than fellow workers and feel that they have no personal input or opportunity to put their 'signature' on their work. Sandercock says that due to industrialisation and technologisation many people find themselves in a situation where their labour has become de-skilled and is subsequently demeaning and diminishing of dignity (86: p. 13). Robert Blauner defines four dimensions of alienation: powerlessness, meaningless, isolation and self-estrangement. He believes that the most obvious of these is powerlessness, the opposite of which is freedom and control (12). To reduce the dilemma of alienation is to attempt to enhance human freedom. The modern notion of alienation is quite different to the traditional conception of alienation in Platonic philosophy whereby a person leaves him/herself to become unified with some transcendent reality (referred to as God when interpreted in a religious sense). This alienation of self was seen as a positive good, as the perfection of thinking (30: p. 324). But in modern technological society, alienation takes on a different meaning.

The philosophical question 'what is humankind's relationship to technology?' has generated much discussion on the subject of alienation. Marx, for example, wrote about 'alienation of labour' within the historical context of the rise of the capitalist-industrial order and the class struggle (104: pp. 37, 38, 40). The series of technical and social developments born from the Industrial Revolution meant a shift of emphasis from the problem of poverty to one of alienation. Marx believed that spontaneity and creativity

were diminished by the coercion of work under capitalism. The workers are alienated from productive life, their tools, labour and fellow workers and exist under a yoke of mechanization and automation over which, as workers, they have little control (30: pp. 323, 324). Human potential under these conditions is no longer realized through self-activity.

For Marx, technology needed to be liberated from its capitalist mode for truly human functions. This overcoming of alienation of labour may mean that people could achieve a free yet productive social existence (104: p. 40). Whilst it is not the intention here to discuss the teachings of Karl Marx, it is interesting to briefly note his thoughts on alienation to see how they relate to the concept of alienation in elite sport discussed in this thesis. When human essence is reduced to a succession of products, the capacity for inner satisfaction is unable to be realised. Furthermore, when the world of objects becomes more powerful and omnipotent, there is the threat of the person becoming a mere commodity or device in the labour market. This form of alienation is the de-personalizing of individuals due to the current emphasis upon "efficiency, productivity, performance, uniformity and conformity" (20: p. 278). Such alienation is manifested in the oppression of the workers, the creation of specialists, the general division of labour through mechanization and a reduced knowledge of not 'what' or 'how', but 'why?' (28: p. 108).

In redefining our relationship to work, technology has also redefined our relationship to leisure. One of the intended benefits of changes to our work tasks and routines was the provision of greater leisure time. Sandercock (86) believes that the notion that we now live in an 'Age of Leisure' is a myth. Rather than having arrived at an age of 'liberation for leisure time' it is the case that:

> In the 20th century, the combination of waste, underemployment, and unemployment, and deskilling as a result of successive waves of technological innovation has made it harder and harder for many people to see any meaning or value in their work, and this has reinforced the tendency to look to personal life and consumption for meaning. (86: p. 14)

Ellul similiarly argues that whilst we are led to believe that we have greater leisure time, this image has really been created in order to compensate for the excess and boredom of work. His observation is that leisure in any case tends to be organised activities reliant

upon technological appliances and a high degree of technicity to accomplish satisfactory results (32: pp. 314-315).

We still suffer under the Protestant work ethic in that we seem to need to justify leisure as serving some utilitarian purpose. Considered suspect since it appears to lack any aspect of utility, play is seen as the handmaiden to work- a means for substitutive satisfaction for the dissatisfaction experienced in an alienating work situation (71: p. 425). Consigned to the peripheries of human life it is acknowledged more for its productive functions. In advanced capitalist society these functions number three: restorative, compensatory and prophylactic. Lasch (57) likewise notes other 'functions' of play - to foster nationalism, build 'character', or improve health. Morgan (71) argues that these functions are not intrinsic to play. Similarly, Lasch says we fail to see the simple beauty of play is not the utility to which it can be applied, but its sheer pointlessness (57: p. 403).

When we are estranged from an experience, whether it be a work or play situation, we divorce ourselves from the possibilities of self-realization (56: p. 177). Action or movement that is meaningless for the person is alienated action. One recent indication that people are feeling alienated by technology is the phenomenon which psychologists have termed 'edgework'. Edgework is the term used for people taking up high risk sports such as skydiving, parachuting, bungee-jumping and white water rafting. One explanation for people participating in edgework activities is that they experience a sense of 'flow'. "Flow is the sense of loss of self-consciousness, deep involvement and concentration and a clear knowledge of the goals one seeks in the activity" (76: p. 3). Some psychologists believe that it is a means for a person to regain their sense of self and identity in a society in which technology creates alienation and loss of identity. Rich, a psychologist, has said that voluntary risk taking is a means to try to fulfill unmet needs whereby the person chooses when and how to act; it is about regaining control (76: p. 3).

Technology was supposed to liberate us from laborious work in order to allow greater freedom to pursue intrinsically satisfying activities. What this means is that scientific and technological progress has failed to be a liberation *for* (leisure); it has meant a liberation *from.* If leisure is an appropriate goal and an avowed end or promise of technology, then it is replete with uncertainties. The technologising of our leisure

pursuits reinforces our position in a technological milieu in which people are dominated by the daily discipline of production, rationalisation and urbanisation (86: p. 14). Automation, computerization and the implementation of robotics has not necessarily created a society which has greater free time in which to pursue more creative activities. What *has* occurred is the situation of a growing number of unemployed, a de-skilled workforce and people who are manipulated by advertising to believe they will find meaning in consumption activities (86: p. 14; 16: p. 65).

The Culture of Commodities and Consumption

According to Postman (83: p. 41), in the 19th century, a common sentiment among a number of prominent people was that industrial progress had brought about "spiritual degradation'. In France, Balzac, Zola and Flaubert referred in their novels to the spiritual emptiness of 'Economic Man' and the poverty of the 'acquisitive impulse'. It is this 'acquisitive impulse' that has redirected the promise of technology. Thus, we have an interesting paradox. Technological progress, whilst supposedly relieving us from discomfort and freeing up more of our time to pursue leisure, has created a situation in which we are less prepared to fill this time with intrinsically satisfying pursuits (89: p. 40). "...the engine of technological progress worked most efficiently when people are conceived of not as children of God or even as citizens but as consumers - that is to say, as markets" (83: p. 42).

The technological 'impulse' encourages us to externalise our needs and wants in the form of material abundance. What then occurs is an overwhelming preoccupation with commodity consumption, and the marginalistion of our spiritual needs (82: p. 52; 59: p. 50). Both these consequences are symptomatic of part of what can be understood as our post-modern consciousness. Harriss defines postmodernity as "...development of a mass culture in which virtually all aspects of social and personal life can be transformed into commodities" (42: p. 109). Thus, the competitive market setting becomes the orientation for personal satisfaction. Human needs become predominantly defined in economic terms and result in a lack of intrinsic satisfaction.

Technology is thought to be appealing because it 'promises' to bring about the reduction of poverty, create the provision of cheap disposable commodities and offer maximum availability of those pleasures which used to be the privilege of the few. As already

mentioned, though, opportunities to undertake and enjoy activities have become increasingly dependent upon consumption of commodities. Consequently, individual free time is increasingly channeled through the commercial sector (46: p. 84). Freedom of choice appears to be a choice between commodities. Freedom of choice may in fact be limited by economic means. Not everybody can afford the commodities that appear necessary to participate in many activities, paricularly activities that require expensive equipment and clothing. This pre-occupation with commodities and the concomitant neglect of the social relations in which this occurs, Hirsch refers to as 'commodity fetishism' (46: p. 86). Those individuals with the available economic means can certainly procure the temporary pleasures provided by commodities. However, they are ultimately inveigled into the enjoyment of a commodity, not an *activity* that enables them to realise intrinsic fulfilment through 'engagement' (13: p. 215). Rarely do commodities 'centre' our lives.

Our social values appear to be increasingly concerned with instantaneous pleasure and gratification, fulfilment of our immediate needs, and desires for food, entertainment, desirable body image, sexual gratification, music, or readily available monetary funds. Technology also allows us to experience things vicariously, such as through television or the more recent phenomenon - virtual reality. Our bodily or facial appearance can be radically changed with the use of technology. We are able to learn languages without the aid of a native speaker by simply listening to tapes. Technology even offers fecund test-tubes to the infertile. Yet with all the wonders of modern science, a sensate cultural mentality means people are prone to identifying their self-worth and status through their material accumulations. Humankind is caught in a "self-perpetuating cycle of ever-increasing wants" and is "...progressively more isolated from fulfilling innate associations with his natural surroundings" (33: p. 36).

Jacques Ellul (13: pp. 14, 103) proposes that progress, in a technological reality, is no longer personal or experimental but is abstract, mathematical and scientific. The traditional notion of a 'doing' society has been transcended by a technical reality that focuses on process and product. Thus, we have perpetrated a 'doing' and a 'having' dichotomy. And as Borgmann states, we too readily affirm our existence through our acquisition of material possessions rather than in human engagement in activities that are ends-in-themselves and that *do* contribute to the good life (13: p. 105).

Borgmann (13) believes that technological progress is commonly seen as a continual succession of superior implements which he refers to as 'devices'. He offers the example of the wood burning stove being replaced by the device of the coal-fired central heating plant. The machinery of technological devices becomes more concealed and streamlined. For instance, the record player which succeeded the phonograph has now been replaced by the smaller less conspicuous compact disc player. This device allows numerous discs to be played consecutively at the mere touch of a button. Moreover, it can be worked by remote control, saving us the 'inconvenience' of having to leave a comfortable chair! Borgmann says that "The distinction in the device between its machinery and its function is a specific instance of the means-ends distinction" (13: p. 43). That is, the machinery of the device is always validated by its end - the commodity it procures.

Technological devices, as part of the artificial infrastructure created by technology, are concerned with functional practicality. Aesthetic and moral considerations confuse this task and detract from it. Subjective, non-quantifiable, non-empirical criteria are rarely a consideration as they traditionally once were as, for example, in the beautiful engravings and embossments on the original Singer sewing machines, or ornately engraved tool blades and handles (13: p. 29; 31: p. 73). In questioning technology's ability to accommodate lasting traditions and implements, Postman says that the attractiveness of technology's goods and conveniences has meant that technological progress has cast aside "...traditional narratives and symbols that suggest stability and orderliness..." for "... a life of skills, technical expertise and the ecstasy of consumption" (83: p. 179).

Human action can be celebrated in activities such as the arts, lovemaking, creative and contemplative thought, and sport. These, and other activities that engage the person, are being subjugated to or replaced by technologies that create artifice, for instance, computer 'sports' games and virtual reality. The concern with these type of activities is that they reduce human interaction. The interaction is between people and machines which provide for a virtual or artificial experience. One's experience or opportunity for creativity is controlled by the limitations of the technology being used. An increasing unrest and dissatisfaction indicates that "...we are disappointed to realize that the human world is not in harmony with the rationality of our mechanical environment" (93: p. 177). We are becoming ever more dependent upon artificial creations and conditions.

Hirsch makes the point that technologically advanced economies fulfill an 'excellence' of human life in terms of commercial production, but fail to provide more of the human goods such as those to be found in virtuous actions, a safe environment, spiritual fulfilment and civility (cited in 13: p. 132). This argument is based on the claim that commodification and material accumulation can only provide a transient and superficial happiness. This shift of technology's promise however does not appear to have allayed the pursuit of technological progress.

The following discussion will consider certain uses of technology by using three examples of areas in our daily existence that have become highly dependent upon technologies. What is illustrated is our infatuation with technological progress and a seemingly dismissive attitude to either real or potential ill effects or consequences of implementing certain uses of technology. In assessing which uses of technology may be considered appropriate or inappropriate, it is helpful to look at the views of both the 'pro-technologists' and the critics of unrestrained technological developments who believe we are following a course of technological determinism. Consideration of their arguments helps us to determine whether there is a real threat posed by the possibility of an autonomous technological drive.

Technological Optimism or Technological Determinism?

We are consistently presented with certain ill consequences of technologies. The international public outrage over the resumption of nuclear testing in the Pacific testifies to an awareness of the serious ill consequences of certain uses of technologies. Yet, a similar stand has not been taken towards other technological developments, for example, in the medical field. Other than minority lobby groups such as environment-protection and human rights organisations, there appears to be a general attitude of ambivalence or indifference towards further technological growth in areas other than nuclear armaments and nuclear testing. Generally, any responses at all tend to fall within two camps: the pro-technologists who enthusiastically revere technology as some kind of saviour, and those who regard continual technological innovation as anathema to humanity's best interests. The following discussion illustrates ways that technology has repercussions for all of society and that the consequences of many technological actions do not consist solely of engineering problems.

Iraj Zandi (106) claims that engineers and technologists do receive criticism from other disciplines, the severest accusation being that technology subverts human values. Such accusations, he claims, are driven by the fear that this subversion will culminate in the creation of "a monolithic world culture in which all non-technological difference and variety is mere appearance" (106: p. 371). The critics argue that technologies are direct products of humans and are thus dependent upon the dominant values and goals of the society at that given time (84: pp. 135, 139). Contemporary debates concerning the ethical position of technology raise serious questions about the motivations of science. These motivations will be examined by looking at the uses of technology in the fields of fine art, medicine, and sport.

The role of science within society has certainly served to increase our knowledge particularly within the empirical sciences. This knowledge has also spilled over into artistic forms of expression such as media formats, for example, music videos, reproductions of art works, technologically synthesised music, and special effects movies. The 'pro-technology' artists argue that such knowledge is simply an expression of human creativity and that its uses increase the scope of possibilities. They welcome the incorporation of technology into their artistic techniques (99: p. 1209; 84: p. 156). They argue that we exist now in the technological age and the uses of technological developments are simply the natural expression of the creativity and self-image of our times. Criticism of the incorporation of new techniques is dismissed as a remnant of a Luddite-like mentality based on institutionalised parameters about what does or does not constitute art which should always be challenged anyway (84: p. 169; 50: p. 21).

Interestingly, an 'aesthetics of technology' was created within the German Bauhaus School of Industrial Design in the 1930's. It combined creativity and individuality with technical knowledge and invention (30: p. 289). The concern is, however, that whereas unusual industrial-like pieces of sculpture and equipment are simply forms of inanimate art, other technological creations have had disastrous effects upon communities and the environment. Art is an expression of human existence but technology can threaten human existence. As Drengson states:

> When the imagination is harnessed to technophilia in order to create and proliferate technologies...and when competition becomes an important force (whether national or international), then it becomes very difficult to control these technological forces. Fearing that this will ultimately lead to total control of

> humans by the forces of technology finally brings a disenchantment with the whole process. (28: p. 109)

Hoffie, in her article 'The Tyranny of Diffidence' criticises the attitude of the pro-technology artists as being one of "naive hyper-enthusiasm" (50: p. 21). She does admit, however that those who believe 'techno-art' falls outside the realms of 'true' fine art, often rely on spurious justifications. Such justifications are that concerns over print-runs, effective numbering of art works, and their pedigree have become more important than experimentation and the impact or resonance of the images themselves. As such, she claims that art becomes a non-interactive process. The normative criteria used to judge art become technical rather than personal. In her discussion of the Australian Network for Art and Technology course, she expressed concern that "the computers with which they were experimenting were instruments born of the search for more perfect methods of destruction", that is, they were products of surveillance and satellite technologies developed for use in the Gulf War (50: p. 21). Weaver also mentions that many products and techniques of today are a result of wartime studies (100: p. 138). He questions the intent of such inventions and whether they are in fact for the human good.

The question of whether human creativity can be truly exhibited in technological mastery is a difficult one. Although creativity is more traditionally associated with music, art, dance, literature and sport, for instance, defenders of technology use the argument that humankind whom they see predominantly as 'tool-maker' is best represented by technological developments. They argue that technology and science have simply opened up the possibilities for a new style or form of art. So, has technology blurred the distinction between what is truly art and what is not? It is difficult, in using the example of fine arts, to decide whether the uses of technology as described here may be deemed inappropriate. This issue of inappropriate uses is clearer in the following example of medicine.

A most valuable and humane objective of our society is the improvement of health and medical care. Over the last two centuries we have witnessed the fruits of medical progress that have provided cures for syphillis, malaria, plague, rubella and the like. One of the major medical research studies of this century is the Human Genome Project. This exercise is attempting to completely map the human genome. Scientists now have the ability to identify and alter human genetic material. Eugenics is one of the new birth technologies that aims at improving or perfecting the human being. Advantages of

eugenics are that people carrying genetic disease such as haemophilia, sickle-cell anaemia, Downs Syndrome and pituitary dwarfism will be able to have children who are *not* carriers. Yet, each scientific discovery or technological breakthrough must follow ethical codes of the World Medical Association since all experiments carry moral implications (21: pp. xiv, xv, xvi).

There are concerns about the potential for doctors or medical scientists to play God. They potentially hold the position of deciding which defects should be judged acceptable or unacceptable. The implications are that people may suffer discrimination through genetic screening and consequently experience the social stigmatization of perhaps having just mild disabilities. Genetic manipulation and selection and DNA probes in prenatal diagnoses may simply become ends-in-themselves (81: pp. 1, 4). Michael Pirrie states that the genesis of such technologies is "...fuelled by the goal of couples to have the 'perfect baby'" (81: p. 1). This statement is misleading because it neglects to acknowledge that it is the *scientists* who have perpetrated the idea of people being able to have the perfect baby. The idea of such a possibility implies something akin to a marketable, consumer-demanded 'better-than-ever-before' baby.

A newspaper article entitled 'Experiments done on Humans in Secret: researcher' (80) recounted an interview with Mr. Paul Mc Neil, the researcher alluded to in the headline. Mc Neil said that human experimentation was being carried out in Australia on children and adults as well as human tissues and genetic material (sperm and eggs). According to medical experts, rules that govern animal experimentation are tighter than those for human experimentation (80). According to the prediction of legal academic, Christopher Corns, human experimentation will result in producing elite human beings (81: p. 1).

Universally agreed upon medical codes prescribe that no risks whatsoever should be taken in human experimentation unless the experiment serves a valid purpose and is balanced with other human values. But what today constitutes a valid purpose? Upon what insights is human engineering based? Whilst such advances may prevent genetic disorders from being passed on, there are fears that such technologies could be immorally used for exercises such as genetic 'cleansing'. Our legal and moral traditions are confronted with the technical challenges thrown up by such biomedical research and the possibilty that a select few have the ability to intervene in our genetic destiny (75: p.

11). Modern science already provides temporary or permanent remedies for many birth defects and genetic disorders, so why is it bent on controlling human development? The concern is that if ethical considerations do not deter such experimentation, we will have a situation on our hands whereby we are guided by the technological imperative and not moral imperatives (97: p. 41). To treat an individual as an object of experimentation is to regard that person solely as a means-to-an-end. In all instances, persons must be respected as ends-in-themselves and never, according to Downey and Telfer (26), solely as a means to an end. This is the basis of the concept of personhood which will be discussed in greater detail in chapter three.

One of Western cultures most basic moral principles is the primary inviolability of a person. Unnecessary uses of medical experimentation should not be considered as medical benefits if they fail to respect the personal dignity of the individual as a person (99: p. 1210). If such technological advances are not to become ends-in-themselves, individuals need to be able to understand the insights that drive such pursuits. When genetic engineering is defended on the basis of the improvement of progeny there are serious moral implications. At least two important questions must be asked. Firstly, in what ways do we apply genetic knowledge? Secondly, what do we consider to be a real improvement in progeny? (99: p. 1210).

Medical science and technology are supposedly employed to provide patient benefits and improved health care. So, serious questions may be raised as to why biomedical science is being applied to those who are perhaps the fittest and healthiest of all, that is, elite level athletes. Hoberman (47) believes that high-performance sport contains and conceals a hidden agenda in which elite athletes serve as ideal models for human engineering. His fears are of clandestine experimentation, such that would produce specific athlete types by concealed chemical or genetic manipulations (47: p. 320). He lists technological applications such as body composition analysers and computer feedback sensors as the concealed dimension of modern elite sports. Since Hoberman wrote his article, however, there has been much greater technological encroachment into the sports arena. Peter Spence of the Cricket Academy was quoted by Derriman and Loverock as saying "...I believe that our greatest advances in future are going to come from sports science" (25: p. 30). For instance, the talent identification program of the

Australian Institute of Sport conducted in laboratories is able to find out by means of various tests at which sports children will excel.

Whilst certain technological innovations are welcomed in elite level sports, others are prohibited. The following are just a few examples of those allowed: analysis of tennis strokes by high-speed computer cameras; computers that draw graphs, plotting the speed and acceleration beneath stick figure animations; cricket techniques corrected by computer software programs; and muscle tension measured by connecting electrodes to athletes (known as electromyography) (25: pp. 28, 30). Sports physiology techniques include the electrical stimulation of muscles to enhance rehabilitation and recovery and decrease muscle atrophy; testing of blood and muscle tissue samples to assess fatigue; telemetric measurement of oxygen consumption by means of a volume of oxygen analyser during actual activity; and blood testing for lactate acid levels in the post-exercise phase. Sports psychology techniques use a number of methods involving mental preparation to enhance performance. One scientifically credible psychological technique is visuo-motor behaviour rehearsal (VMBR). It is concerned with the relationship between mental imagery and human performance involving covert rehearsal strategies of mental imagery practice (49: p. 188).

Performance-enhancing drugs are one of the more commonly known uses of science and technology in sport that are considered inappropriate. Steroids, amphetamines and beta blockers, for instance, are prohibited. However, the arguments supporting the prohibitions are questionable (the relationship between technology and sport and the performance-enhancing bans are discussed in greater length in chapter four). Those who maintain that these bans should be lifted argue that each individual athlete should have the freedom to choose a course of action in his/her sport especially since technology allows the athlete the opportunity to realize his/her fullest potential (41: p. 29). Ellul (32) says that since we live in a technological environment, we are so conditioned by the technological milieu that we no longer make choices *about* technology. Rather, all our choices are made *within* the technological system and in this sense we do not possess real freedom. He is alluding to our unwitting dependence upon technology.

When we become deeply immersed in technological culture we lose sight of opportunities that allow us to define ourselves otherwise. We become harnessed to the 'inner logic' of the technological impulse (84: p. 165). The possibility for alternatives

fades into obscurity unless of course they are *technological* alternatives. Pursuing the technological imperative under the guise of 'liberty to realise all possibilities for action' can undermine respect for each and every individual. It is to apply the prerequisite of technological action - the objectification of nature - to humankind itself. It legitimates humans as a field of experimentation that takes into account only their physical and biological forms and ignores non-technological culture and the individual's intellectual and spiritual being (84: p. 131). Rifkin, has stated:

> Science and Technology in Western civilization have reduced living things to material for manipulation. We need to ask ourselves:' Is life more than the chemicals that make it up? is [sic] life more than tissues and cells and nucleic acid sequences?' (81: p. 4)

New technologies impose limitations upon human freedom in that our actions require a sense of conformity to technical processes and applications. The adaptations to ever-changing innovations may be so subtle and coercive that the implications for the individual as a free agent are none too apparent:

> Under the conditions of a rising standard of living, non-conformity with the system itself appears to be socially useless, and the more so when it entails tangible economic and political disadvantages and threatens the smooth operation of the whole. (67: p. 2)

Next, the potential threat to human freedom by successive technological developments and the question of the neutrality of technology will be discussed alongside claims that technology is proceeding along its own autonomous course.

Human Freedom, Neutrality and the Question of Autonomous Technology

The ability of scientists to converge techniques to alter the corporeality of humans is just one example that further indicates what appears to be an inconclusive pursuit of scientific discovery without serious acknowledgement of ethical imperatives. In his moral discourse Grant says that values and freedom are not independent of the will to technology, but modern science objectifies nature (including human beings) and is indifferent to values (38: p. 196). Grant believes that human essence is founded in freedom. Ethics and moral principles enable people as rational and relational beings to seek freedom. Borgmann has said that the capacity for significance is where human freedom should be located (13: p. 102). So how does technological determinism fit into the whole infrastructure of a moral and humane society? Durbin acknowledges the

need for technologies to be properly employed since their uses require value judgements:

> Those who affirm technology's neutrality see it primarily as a form of knowledge. But the skeptics who regard technology as the will to power and domination claim that it is not neutral since technologies operate on principles devoted to producing definite results, and this necessarily requires judgements as to the uses of technology. (30: pp. 306, 326)

The assumption that technology is neutral is illusory. Although we are able to judge and decide to what ends or purposes we apply our technical developments, the consequences need to be addressed within an ethical construct. Issues such as euthanasia, organ transplants, use of technology to control mortality, and reliance of athletes upon performance-enhancing substances, for instance, involve ethical analysis and argument. Technicians and scientists work towards extending current technologies, but each time a new technique is created it extends our responsibilities and our obligations to both present and successive generations (9: p. 339). Herein lies the fear that technology is able to govern its own course and resist limitations through its own self-propelling inertia (13: p. 101). When humans lose or forsake their role as active directing agents, uncritically obeying the rules and requirements of technological systems, then science and technology cannot be amoral nor their uses ambivalent. Ellul claims that "...technique does not acknowledge the distinction between moral and immoral use since it has created its own independent technical morality which allows it to progress in a causal fashion" (31: p. 97).

Critics today see technology as a phenomenon that has become a law unto itself rather than being under the control of the select few. Winner claims that a privileged position of an elite or ruling class is insufficient proof alone that this group in fact controls or guides technology. He says that socially organised technology directs itself, and those holding the means of power are forced along its determined course (104: p. 41). As such it is seen as taking on an autonomous character. Rene Dubois says that "technology cannot theoretically escape from human control but in practice it is proceeding on an essentially independent course" (29: p. 191). Surely the practice cannot occur without reliance upon human control and knowledge itself? And, if technology is neutral, a means to our ends, then the benefits or disadvantages it brings would depend upon how humans apply it.

The issue of the neutrality of technology is illusory because of the growing obscurity of the means-ends distinction. The subtlety of technology being a law unto itself is alluded to by Grant (2). He asserts that technology is not merely instrumental, it is a 'world-view'. As well as providing and expanding our means it now also prescribes our ends (2: p. 309). The traditional notion of technology as merely a collection of technics which derive their meaning in their ordering towards something else assumes neutrality. However, in the quest for the reduction of nature to objectivity and quantity, rather than seeing quality and subjectivity as something real, technologies aim towards the total control of human and non-human nature (2: p. 310; 51: p. 347). Human 'will' is supposedly the heteronomous law applied to technology (in the Kantian sense that autonomy is free will and the capacity of the will to follow moral laws). Winner's definition of 'to be autonomous' is to be "self-governing, independent and not ruled by external law or force" (104: p. 16). The fine line between being in control of technology or being subordinated to it brings to our attention the question whether technological advancements should be regarded as freedom gained or freedom lost.

Traditionally, our autonomy was manifested through science in the mastery and manipulation of the natural and material worlds. What we are now realising is that such 'mastery' is lost with a decline in our ability to know, judge or control our technical means. When repercussions fall upon the human order due to technology's mastery, not only of scientific laws but of biological and psychological phenomena, then the possibility of autonomous technology threatens and endangers human values (90: p. 54; 19: p. 130; 28: p. 107). Drengson (28) defines four fundamental attitudes toward technology. These are technological anarchy, technophilia, technophobia and technological appropriateness which form a continuum from a love and faith in technology to a complete distrust of it. Drengson says that a technophobic reaction is the response when our infatuation with technophilia ends. The infatuation ends with the realisation that technology is becoming an autonomous force, a governing force and ultimately a technocracy. A technophobic reaction to the threat autonomous technology poses to humane values achieves two things according to Drengson (28: p. 108). Firstly, it generates a renewed committment to human values and secondly, it revitalises those practices and activities which emphasise personal development. This distancing of ourselves from technology allows a greater understanding of our relationship to technology. Drengson says that "from this vantage point technophobia

can be seen as one of the stages of growth that involves becoming aware of the use of technology in a consciously reflective way" (28: p. 108). Drengson says that what is required is a position of appropriate technology. Appropriate technology requires reflection upon our ends, consideration of technological limits before commitment to new technologies, and respect for human and non-human values. Drengson says " the appropriate technologist is respectful of the values *in* the world, whereas the technocratic mind attempts to impose patterns of its own devising *on* the world" (28: p. 112).

Ellul's discussion of technique reveals his overriding belief in the reality of technical autonomy. If technology does proceed along its own course as Ellul suggests, this means perhaps that we participate less actively in technical creations. Individuals of course create technologies and *start* the operations but technique aims towards results of mathematical precision and as such tolerates no *human* variability and elasticity. Ellul states that "it is a commonplace to say that the machine replaces the human being" (31: p. 138). When technology transcends the intentions of its creators and its unforeseen consequences appear to escape human control then it indicates a potentially autonomous character. Such one-sided technological progress can neither accommodate, nor provide for human self-realization and human autonomy (30: p. 301).

Mumford says that "our wholesale commitment to the machine" must be replaced by a re-establishment of "the vital harmony of autonomy, self-direction and self-fulfilment through a fuller closer picture of both human nature and technics since they have evolved together" (74: p. 85). And in Kant's words, "a rational being can act only under the idea of freedom and so must conceive himself as autonomous, and therefore as an end in himself" (54: p. 139). The individual has in certain instances become a *means* of technology; an instrument used in technical, scientific and psychological experimentation. To regard a human being as a mere thing that can be treated in purely quantifiable objectifiable ways is to deny human autonomy.

With specific reference to North Americans, Grant says that technological society is not "...a 'terra incognita' into which we must move with hesitation..." (38: p. 193). Ironically, though, the term 'terra incognita' (unknown ground) is a most apt description of our current society since the effects of certain technologies are not fully known or understood until they have actually been put into operation. New problems cannot always be predicted in advance. Each time we place our faith in the new technologies of

the select few who control their development and uses, we enter a 'terra incognita'. It is the *effects* of these techniques, irreducible to statistical data that must be given serious attention (38: p. 200).

Technological 'Fixes'

Humanists and technicians hold different conceptions of our 'being' in the world. Whilst technicians may have good intentions for improving our 'lot' in life, they tend to hold high aspirations for human beings only. This is an anthropocentric view of the world that has already proved to have disastrous consequences for the environment. All too apparent are current problems such as 'Greenhouse effect', ozone depletion, radioactive leaks, and lead poisoning of the air we breath. The effects wrought upon the environment and growing dissatisfaction with the religion of consumerism all point to the likelihood that each technological-utopian yearning may have a corresponding potentially disastrous consequence (9: p. 348). It is only in recent years that environmental issues have forced us to take stock of consequences and to question our 'throw-away society'. We are forced to ask ourselves what price are we prepared to pay for our new given 'riches' and how are we to re-orient ourselves in regards to preserving the 'natural' which we have so easily taken for granted? Conversely, those who call for reflection upon the uses of technologies value other life-forms and acknowledge the vulnerability of the ecosystem under human domination. They understand the 'wholeness' of things, not only of nature but other features of our existence such as art, ethics, spirituality, religion, philosophy and other activities that provide for self-fulfillment. Yet, there still predominates a virtually unquestioning faith in the word of the technicians .

Modern technologies such as information technologies and bio-engineering devices may arguably contribute to the benefits of human life but also apparent are certain risks and costs. The 'technological fix' is the attempt to correct unanticipated or unwanted consequences of technologies with further technological applications, that is, the use of technology as an 'antidote' for technology. It is the result of an unfaltering faith in technological progress due to 'successes' of the past such as increasing material comfort and a decrease in labour hours (30: p. 334; 27: p. 263). Technology is regarded as the universal panacea in that it can solve any problems that it creates itself. For example, contraception devices were devised as a means to control population explosions which

were a result of improved fertility and birth rates due to technological applications (82: p. 52). Another example is the 'Star Wars' technology that was created as an antidote to the threat of nuclear war.

The devastation caused by new technologies such as hydrogen bombs in World War II did not eschew the promise founded upon progress. Habermas believes that the direction of technological progress is determined without being reflected upon (40: p. 60). It is the *efficiency* of new systems that is the indicator of technological progress; increased operating life, reliability, output and precision. New potential for expanded technical power "...makes obvious the disproportion between the results of the most organised rationality and unreflected goals, rigidified value systems and obsolete ideologies" (40: p. 60). The notion that further technological discoveries will lead to a better understanding of our current technologies is a misconception. This will only happen if we evaluate the social context within which technologies are implemented. For this to occur we must re-assess our belief in an increase in technological power to combat existing problems and question the 'technological impulse' (27: p. 273).

It is not feasible that we renounce technology or attempt to live without a scientific rationality. Yet, we can attempt to understand the limits of a technological fix and aim for progress that is not ultimately concerned with efficiency and innovation alone, but which recognises and allows for expression of humanistic values. Devices and techniques are a means only, they are not ends (84: p. 63; 67: p. 67). Considering ends requires reflection upon other persons and other 'beings'. If technology is our binding point of reference, the overriding 'end', we in effect assign the technician the role of overseer of our destiny.

In light of the lack of public control over our technological capacities, can we rely upon those in control of technologies, namely the scientists, technicians, engineers and politicians, to exercise ethical controls and to make responsible decisions for us? Rather than re-assess and reflect upon our current situation, we remain accomplices in the inertia of an increasingly technologically determined reality. Yet, we cannot even begin to hope to understand the limits of our technologies through scientific questioning and reasoning alone. We must acknowledge the uncertainty of our existence (27: p. 261). The humanists emphasise holistic approaches such as self-realisation and fulfilment since these are non-manipulative approaches which also respect and hold important

other life-forms of this world. "We transcend the limits of a technological bind by entering the realms of philosophy, art and the sacred, that is, the realms of value" (27: p. 260).

Beiner and Sandercock (9) advocate a change in our attitudes and values to remedy the situation we are in. "We must adopt an ethics of preservation and prevention, not of progress and perfection" (9: p. 347). "To move from an 'exhausting' to a 'renewing' economy and society should be the aim" (86: p. 14). There seems to be no limit to the escalation of our needs and demands since the symbolic meaning of possessions is continually outmoded. The division of labour, devaluation of aesthetic sensibilities, environmental harm, increase in disease (e.g. cancer) and biocide, however, all stress the need for limits (27: p. 267; 84: p. 2). To impose limits requires the development of growth trends that will enable us to achieve as closely as possible economic and ecological stability (84: p. 16). The imposition of limits to technological growth have yet to be more clearly understood in relation to human needs and values (59: p. 9). The next chapter will examine this relationship.

Conclusion

This chapter has addressed the situation we find ourselves in with regards to living in an increasingly technological reality. In examining the influences technologies have had upon our work and leisure it is possible to see how a shift has occurred whereby a technical-instrumentalist rationality now predominates. The concern with this is the question of technology's capacity to provide for human expression and fulfilment. Technology is a means, but people create values through practices that are distinctly human and are ends-in-themselves (51: p. 177). Mumford says that capacities and capabilities that provide for human expression are not truly human when taken over by the external control of machines (74: p. 83). If technology continues to shape what we do, life may well become more and more a vicarious experience due to an all-pervasive technical intermediary (104: p. 36). Human well-being loses something when it is invested in methods, statistics and empirical observations because the worth of our existence is founded in subjectivity. Hans Jonas no longer sees technology as being merely for human use. He says that it now makes "a mockery of human agency" (9: p. 339). Rather than creating more odious forms of warfare, means for medical

manipulation of humans, and more sophisticated surveillance control, we must look towards sustaining truly human forms of work and play.

Whilst acknowledging ways in which technological progress has facilitated our existence, particularly in terms of material comfort, it has also been demonstrated how, on the other hand, the shift in the promise of technology has incurred certain costs. Questioning the compatibility of further technological advancements with the fulfilment of truly human capabilities entailed a discussion of issues such as how we affirm our existence within a technological milieu; what is the true expression of human nature and whether technological applications to human pursuits and even human beings themselves enhances or impedes self realisation.

Arguments forwarded in this chapter have predominantly been from a humanist perspective. They ultimately express the belief that our human essence is *not* to be found within technological accomplishments. The latter are only an expression of our advanced technical capacities. Our essence is in the exercise of rationality thus allowing us to respect, value and enjoy both activities and other beings for their own sake. Ways in which technology has the potential to dehumanise our existence through unreflective technological progress have been explained through addressing such issues as creativity, neutrality, freedom, choice, and autonomy.

Authors such as Jacques Ellul are critical of technology in a way that appears to embody it in the form of a living, almost human enemy. Technologies themselves are neither inherently good nor bad; it is the reasons for which they are invented and the purpose of their application which may be deemed good or bad. What in fact should be assessed and questioned is the applications of, and our own relationship to technology. Whilst technology has fulfilled its promise of liberating us to an extent, ironically we find ourselves dependent upon it. This amounts to conditional freedom. Ellul says that whereas machines replaced the need for slaves, human beings are in fact experiencing a 'new slavery' in their unwitting dependency upon externally controlled machines, systems and devices (31: p. 192).

Adequate social policies are required to deal with these cultural changes. Sandercock (86) advocates that appropriate social action for dealing with technological change must start with education. She proposes that education, now and in the future particularly,

will need to be about providing an understanding of the relationship between science and technology and politics and social change. It should be responsible for enabling people to distinguish between good and bad work. Most importantly education should inform us about work, political struggle, community service and play (86: pp. 17, 18).

The next chapter examines phenomena considered to be ends-in-themselves such as activities practised for their own sake, virtues, and persons. Each of these is addressed within the ethical frameworks based on the moral philosophies of Aristotle and Kant. An understanding of why we value certain phenomena as ends-in-themselves as opposed to means to other ends can enable us to see ways in which certain technological developments have devalued the intrinsic good of these phenomena and have subsequently reoriented our value system. These changes to our value system will also be addressed.

CHAPTER III

PERSONHOOD AND THE GOOD LIFE

Chapter two described the development of technology and examined the influences it has had on our work, leisure, and needs and wants. In examining reasons underlying technological progress, questions were raised concerning the future direction of technological developments. In order to assess the arguments of both the critics and the proponents of technological development, the uses and abuses of technology were considered in three different areas, namely fine art, sport and medicine. What became apparent was, that whilst certain uses of technology have certainly expanded our means for creativity in fine art for instance, some other technological applications such as in the field of science and medicine are questionable. The need for ethical considerations in the development and use of technology was highlighted and it is predominantly the ethical issues which form the pivotal point for discussions within this chapter.

First, the ethics of Kant and Aristotle are summarily outlined. These moral philosophies are used to flesh out the normative criteria which will be used to critique technological applications in sport in chapter four. They are employed in this chapter for two main reasons: they are still appropriate and applied in the present day and they assist in understanding the concepts of rationality, respect for persons, means, ends and ends-in-themselves. These ethical accounts enable us to identify why it is that we value something or someone as an end-in-itself as opposed to merely a means to an end. A central concept to be discussed here is phenomena which are considered to be ends-in-themselves. The exercise of rationality is an end-in-itself. Kant's thesis on rationality as the essence of a person underpins the concept of personhood. To show respect for persons is to exercise a rational will and to value those persons as ends-in-themselves. One of the main tasks of this chapter is to examine Kantian-type moral arguments regarding the impact of technology on personhood.

Activities that are compatible with the notion of personhood (focal practices) are also discussed as ends-in-themselves. An explanation of internal and external goods enables us to see how these pursuits contribute to what Aristotle referred to as the flourishing life. These kinds of ends are then contrasted with what may be called technological ends. This comparison lends support to the argument that certain technological

applications may threaten the very nature of certain activities considered to be ends-in-themselves. Also, the moral implications of the impact of certain uses of technology on personhood will be explored. It is argued that technology is a means subject to ethical controls and should not become an end-in-itself.

Homogenisation of experiences, artificial reality and reduced possibilities for choice are just a few of the changes technological culture has brought about. These are discussed as negative effects. The possibilities for exercising freedom of choice in a technological society are considered in light of the claim that our freedom of choice is conditioned and limited by technology. This issue is examined in relation to the notion of the freedom to act according to categorical imperatives (as outlined in the discussion of the ethics of Kant). Finally, ways in which our values have changed as a consequence of our increasingly technological complicity are critically examined.

This chapter opens with a discussion of the theses of Kant and Aristotle on rationality and what it means to be a person. This concept of rationality is essential to an understanding of what it means to consider persons and activities as ends-in-themselves. With a grasp of these concepts it is then possible to evaluate the claim that certain technological ends are not compatible with the notion of personhood as we understand it in Aristotelian and Kantian terms.

Personhood

Kant believed that rationality was humankind's distinguishing characteristic and that it was grounded in duty - the ability to govern conduct and relations by moral laws or 'categorical imperatives'. Categorical imperatives are universally binding laws on all rational agents. One is only able to act according to duty if one is a free and rational individual who does not submit to thoughtless obedience to desires (78: p. 66). Kant regarded duty as an end-in-itself such that it served no personal interests, was unconditional and had absolute value. According to this principle, in practice, all moral agents would so act that common goods coalesce towards the greater good (i.e, a virtuous and fulfilled life). The rational agent is thus a free agent in that he or she is able to choose such action and subsequently act out of respect for duty. The rational person is thus free from acting only on whims and caprice that serve temporary conditional

pleasures. Irrational agents must use means to achieve ends (objects of desire) that have conditional value.

In their discussion of 'ends', Downie and Telfer (26) define one meaning of 'end' as that which is valuable in itself and is cherished for its essence or distinguishing features. This sense of end is used to discuss respect for persons. As the basis of this discussion, Downey and Telfer use the Kantian thesis that what gives a person absolute worth is his or her possession of a rational will. Such a person is self-determining and rule-following and not only thinks rationally but also acts rationally. They discuss whether respect for persons is *one* of our basic moral principles or the supreme regulative principle and then conclude that it is the supreme regulative principle since all other moral attitudes and principles can be explained in terms of it (26: p. 15).

According to Kant, respect for persons entails that persons are treated not merely as means to ends, but as ends-in-themselves. Kant's categorical imperative unconditionally commands that:

> Persons therefore are not merely subjective ends whose existence as an object of our actions has a value for us; they are objective ends- that is- things whose existence is in itself an end, indeed an end such that in its place we can put no other ends to which they should serve simply as a means. (54: p. 96)

As Kant said, if all value were conditional or contingent, morality would not be possible since nothing, not even persons, would be considered as an end-in-itself. Therefore, reason would not comprehend the supreme principle of morality, a maxim binding universally on all rational agents. If we did not have the inherent capacity to be rational, respect for persons could not exist and we would be reduced to a mere sentient existence not unlike that of other animals. As relational beings we are also necessarily rational beings (8: p. 46). Our rationality enables us to respect and value ends-in-themselves including persons, phenomena such as works of art, and activities such as sport, music and dance, all of which contribute to a greater good. The Aristotelian thesis of the 'greater good' is explained below.

In the Nichomachean Ethics, Aristotle (4) states that each individual good must ultimately aim towards a supreme good. Thus arose his notion of 'Eudaemonia'. Although frequently translated into English as 'happiness', eudaemonia means the flourishing life or the life most worth living. The 'eudaemon' is the person who

exemplifies the well lived life. Aristotle claimed that the eudaemonic life could only ever be such in terms of a whole life involving the development of the excellence of both intellect and character. The 'good life' or the life most worth living is realised through other ends-in-themselves such as the virtues, the arts, politics, and contemplation in particular (4). Aristotle saw humans as teleological beings; purposeful in living a flourishing life. The excellence sought by the privileged few of traditional high culture was effected in free time and leisure, the good life being one of human engagement.

Eudaemonia, grounded in morality, is the supreme end in relation to the virtues. To recognise and value the virtues as ends-in-themselves requires the exercise of our rationality. The 'doctrine of the mean' was the construct by which Aristotle described and judged right or virtuous action. There are two vices associated with every virtue. In a situation which requires an emotional or moral response, reasoned action is the virtuous mean which lies somewhere between two extremes. The doctrine of the mean is about moral excellence as well as intellectual excellence. For example, bravery would be a rational and virtuous course of action between the two extremes of foolhardiness and cowardice (4: pp. 33-37). According to Aristotle, virtues such as courage, honesty, fairness and temperance, for example, can only be possessed by the rational person since possessing and practising the virtues does not involve them as means to further ends. The *irrational* person is such because they are inclined to satisfy whims and desires. For instance, a rational person may possess the virtue of temperance whereas the irrational agent who is intent on indulging his or her desires is licentious. The irrational person is predominantly concerned with those means that will enable them to achieve temporary and conditional ends. Aristotle equated such an individual with other animals since he believed that our distinguishing feature, our 'ergon' (function) in life, was the excellent exercise of our rationality. Rationality is central to the life of the eudamon in order to appreciate things that are 'ends' for their own sake. The virtues as possessed by the rational agent are not used as means to further ends but are valued and exercised purely for their own sake, their intrinsic value. As Aristotle stated, the irrational character is unable or unwilling to value those things considered as ends-in-themselves.

The Aristotelian conception of human excellence sees the 'end' as that which the person is oriented towards precisely by virtue of being human. This refers directly to our

rational faculties and our capacities for contemplation and theoretical understanding and practice (51: p. 351). Eudaemonia -the common good sought by all persons - is an end-in-itself since it is sought for no other ends (or purposes). Thus, it cannot be a means to an end.

Certain practices are also considered to be ends-in-themselves. They contribute to the greater good of a flourishing and well-lived life since they are undertaken and enjoyed not as means to ends but as ends-in-themselves. They provide for engagement and fulfilment. Thus they are compatible with the notion of personhood described above. Central to the understanding of why focal practices contribute to the greater good is the concept of internal goods or rewards of focal practices.

Focal Practices - Ends Compatible with Personhood

One of the central points of this chapter is a discussion of those activities or pursuits that are considered to be ends-in-themselves, namely 'focal practices'. The term 'focal practice', borrowed from Albert Borgmann, is defined as "one that can center and illuminate our lives... is alive as a regular and skilful engagement of body and mind...if it graces us in a full and final way" (13: pp. 4-5). Davis (24) uses a similar term for these practices. He calls them 'vital projects' - those which allow for conception of self, self-development and provide the possibilities for self-actualisation. They provide opportunities for us to complete our being through engagement in intrinsically satisfying activities (24: p. 28). Focal practices, be they involvement in activities such as craft-making, sport, literature or music delineate and sustain traditions and the continuity of life. They define and affirm life's stages through their intrinsic meanings and symbolism.

It is important to provide a conceptualisation of these particular ends-in-themselves. They are important both within the context of this chapter and in the next chapter since they form part of the normative criteria used to examine the relationship between sport and technology in chapter four (sport pursued in a particular way is considered to be a focal practice within this thesis). An understanding of the intrinsic value of focal practices is implicit to the argument that technology can pose a serious threat to these pursuits.

The value and significance of focal practices is more evident in light of Kant's third duty. Kant's third example of duty, proposed as a 'duty to ourselves' is simply the duty

to develop one's talents. Kant claimed that individuals are born with certain talents and aptitudes. One has the choice to either develop these talents or neglect them and indulge oneself in idleness and temporary conditional pleasures. But, according to Kant, it is inconceivable that one should wish, or attempt to *will* that such an attitude (of neglect) become a universally binding law, that is, a categorical imperative. Kant states that it is important to develop one's talents since they "...serve him and are given him for all sorts of possible ends" (54: p. 90).

When participating in focal practices as ends-in-themselves we experience the intrinsic value and rewards of these pursuits. This is because involvement in focal practices constitutes partly what it is to be human since our essential distinguishing characteristic- rationality- is able to be realised in focal practices. For example, in participating in sport (when regarded as a focal practice) we recognise our duty to be rule following and exercise virtues such as honesty, fairness and courage. Focal practices provide opportunities to develop one's talents and, as Osterhoudt has stated with regards specifically to sport, "...sport has been and ought to be an expression of man's fundamental nature, and an articulation of a moral posture which secures an authentically human condition in sport" (78: p. 66). As MacIntyre says, " A virtue is an acquired human quality the possession and exercise of which tends to enable us to achieve those goods which are internal to practices and the lack of which effectively prevents us from achieving any such goods" (65: p. 191).

Borgmann discusses focal practices and focal concerns as phenomena in which means and ends are united as one, that is, as ends-in-themselves. He illustrates how technology has created a diremption of means and ends in his discussion of the device paradigm. He claims that devices such as the central heating plant or the television set have restructured the world with regards to space, time, self, other, means and ends (13). Borgmann argues that, unlike focal practices such as running or the family meal which provide for engagement, devices disburden and disengage us. This is because devices are primarily for providing commodities in an effortless, convenient manner. This will be clearer if we look at Borgmann's example of the central heating plant. This device is separated into means and end. The machinery of the device is the means which provides the commodity or 'end' of warmth. Whereas the traditional wood burning stove required engagement in a host of activities from chopping the wood, preparing the fire, stacking

the wood and so forth, the machinery of the device- the central heating plant- disburdens us from these chores. The traditional woodburning stove involved social engagement and thus provided more than just a single commodity (warmth). It is a focal thing because it provides a *focus*, a place that gathers people together. It is implicit in family relations (13: pp. 40-42).

Borgmann is not so sentimental that he doesn't acknowledge that most people would prefer to be 'disburdened' from such tasks as chopping and gathering wood, but his discussion is more concerned with what is lost with this disburdenment. He discusses the symbolism and the gathering force of the hearth of the traditional wood burning fire. It provided a focus or central place for the family. The central heating plant has no gathering force, and involvement is reduced to the flick of a switch. Borgmann uses Heideggerian language in referring to the traditional stove as a 'thing'. In contrast to a device, a 'thing' is inseperable from its world since it illuminates it and calls forth skillful and knowledgable involvement. The device disengages us. Borgmann says that the television epitomizes the seductiveness and impoverishment characteristic of the device (13: pp. 128-129).

If the promise of technology was once that of liberation and enrichment, it has now been construed as the convenient availability of commodities. For instance, the device of the car provides the commodity of transportation, the stereo set provides instant music. Availability is part of the distinction between things and devices. With devices the relatedness of the world is replaced by its machinery and renders its ubiquitous and instantaneous commodities readily available (13: p. 47). Borgmann says that "...a device typically procures commodities and calls forth the life of consumption and disengagement ..." (13: p. 66).

Borgmann believes that focal practices can certainly be enhanced by technology (for example, a runner's scientifically constructed shoes) but should not be taken over by technology. Focal practices can lead us not to negate technology, but to restrict it to its proper sphere. He gives two examples of 'focal events' - the 'great meal' and the 'great run'. He says that in 'good' running "the runner is mindful of the body because the body is intimate with the world" and "...in the runner, effort and joy are one; the split between means and ends, labor and leisure is healed" (13: pp. 202-203). He talks of the great

meal as a thoughtful activity of sharing food that is the culmination of tradition, well-being and conversation with friends and family (13).

The fulfilment of human capacities cannot be actualised under the technological approach that is used to expand the system of control. The former requires us to employ our rationality in ways that Kant and Aristotle showed it to be properly human. To experience this kind of fulfillment is ultimately to be 'engaged' and to experience internal goods. The argument that technology threatens focal practices and indeed other ends-in-themselves is based upon Ellul's claim that our technological reality allows human engagement only to the degree that the person is subordinate to the search for efficiency which resists ethics, aesthetics and carefree abandon (31: p. 74). If technics were brought back into being *means* for human development, we could cultivate an appreciation of those activities of human life and the organic environment that have been suppressed by a technical reality (74: p. 85).

An investigation into how the rise of technology has meant a turn from a 'thing' to a commodity (a 'thing' in the Heideggerian sense is a 'focus') necessitates an examination of internal and external goods in order to assess the claim that technology has resulted in the turn from engagement to diversion (13: p. 199). Internal and external goods provide a useful distinction to sort out the values we hold, our intrinsic human needs, and the potential for internal goods to become trivialised in the relentless pursuit of technology. In the next section, MacIntyre's notion of internal and external goods will be applied to Borgmann's notion of focal practices.

Internal and External Goods

Pitirim Sorokin says that within each culture there are both internal and external aspects. The internal is that of inner experience: ideas, feelings, thoughts, ideas, emotions and self-actualisation. It is this aspect that determines the character or mentality of a particular culture. The external aspect belongs to the culture only as a manifestation of its internal aspect. The external exists as material objects, events and processes that are outside the internal experience (94: p. 20). Whereas Sorokin speaks of internal and external *aspects*, Alisdair MacIntyre discusses internal and external *goods* (65). Goods are what drive human desire. Internal goods are those that are intrinsic and specific to a certain practice. They are what give that practice meaning apart from any external goods it may serve.

Internal goods illuminate our world and may only be experienced by participating in a particular practice whether it be sport, wine-making, finding pleasure in viewing a work of art or a play, writing, or simply the exercise of virtuous action. The goods internal to a practice are unique and peculiar to that practice and thus may only be experienced by participating in that particular practice. To be engaged in an activity for its own sake, to practice virtue, and to respect ends-in-themselves (which includes persons) is to experience internal 'goods' or intrinsic rewards.

External goods are those such as wealth, power, prestige, fame, or commodities for instance. These goods are not unique or peculiar to a practice. One does not need to pursue or value a particular practice to experience them since they are common to a whole range of practices. Whilst we might agree that activitities are commonly valued for both their internal and external goods, there may be the case whereby a person may participate in an activity or practice solely for the external goods. If one is participating in a practice solely for the sake of the external goods or rewards and then discovers that these are more likely to result from participating in another practice, then one has no reason not to change over to the other practice. In seeking external rewards only one does not value the intrinsic goods which are peculiar to each practice. The practice serves only as a means to attaining the external goods. This is not to say however, that an activity or practice cannot be valued for *both* its external and internal goods equally, they are not necessarily mutually exclusive. External goods are characteristically objects of competition based on the premise of scarcity. Conversely, internal goods are not scarce. They are to be had by anyone who participates in an activity or enjoys something for its own sake; they are 'available' for the whole community.

Macintyre says that external goods are not to be confused with internal goods of a practice. To illustrate this point he uses the example of a portrait painter. The painter may acquire wealth, influence or wide recognition but for him/herself, the artist discovers within the pursuit of excellence in this practice, a greater, lasting good (65: p. 177). The artist has responded individually and creatively to the opportunity for self-expression, internalised within the painting itself.

The high-consumption ideal of technological societies results in an over valuation of external goods and an under-valuation of internal goods. Borgman (13) claims that the internal goods to be acquired through engagement in focal practices can prosper in

human practices only. Borgmann claims that technology has not produced focal practices, nor does it accommodate focal practices because an individual's needs for self-actualisation and self-fulfilment - themselves internal goods- cannot be articulated through technological means. It might be argued though, that the practitioner who engages in the development of new technologies may experience internal goods. A technologist might develop a new technique which revolutionises computer-aided drawing techniques for architects or perhaps discovers a new life-prolonging scientific procedure, for instance. It could possibly be argued that at the cutting edge of technological innovation a scientist may self-actualise in the act of experimentation. However, scientific and technological experimentation is quite different to a focal practice in that it is used as a tool or means for our use. Scientific experimentation is a means the ends of which are often ethically questionable, particularly if we consider the technology employed in warfare. Borgmann argues that focal practices are threatened by technology and need to be shielded from a technological diremption into means and ends (13: pp. 199, 200, 202, 209). Focal practices are end-in-themselves and are considered to contribute to a well-lived life. They enhance our lives and this is why we participate in them.

Technical definitions of phenomena do not carry the symbolism associated with the internal aspects of practices or experiences. Human existence is manifested and interpreted through the artefacts or physical displays of intrinsically rewarding pursuits such as sculpture, ballet performances, architecture, sporting feats, and literature. Robbed of their internal meanings these human activities become merely things to be objectified, quantified or acquired by extrinsic means (through wealth, for instance). For example, when viewed only as an investment, an artefact of beauty and human endeavour such as a work of art is debased. Its genuine value (of the non-monetary kind) is misinterpreted; its aesthetic and intrinsic worth are overshadowed when it is regarded primarily in terms of its potential as a lucrative business transaction.

Focal practices hold an intangible wealth. Unlike commodities, their intrinsic worth is everlasting, it is not disposable. When things traditionally done or made by humans are transformed into technical productive processes, for instance, furniture, objects of art, pottery or glassware mass-produced cheaply on the production line, they lose their internal aspect. Yet original art works or hand-crafted pieces of furniture for example,

retain a certain inner quality and often symbolism. Perhaps this explains why antiques are so highly valued apart from their monetary worth. Interestingly too, Ballard (6) comments that the events of birth and death lose much of their symbolic significance in societies under technism. They occupy no privileged position but become events on a par with others that can be treated as scientific or technical problems (6: p. 226).

In a society in which objectivity is considered of highest importance, the unification of specialist and personal demands, as those of the artist or athlete for instance is divided. Ballard states that a predominantly technical culture is not concerned with such a unification since the richest human experiences of insight, introjection, actualisation and self-awareness offer the technician nothing to formalise (6: pp. 213, 223). Discussing the possibility of technological devices to challenge and fulfil, centre and illuminate our lives as focal practices do, Borgman advises that "...we must not allow vague promises of technological magnificence to blight the simple splendor of things that now center and sustain our lives" (13: p. 218). In subjugating ourselves to a technical dynamism we forfeit opportunities to transcend an existence premised upon the acquisition of external goods (84: p. 14). We need to ask whether technological means have in certain cases become technological ends and what might be the implications of this.

Technological Ends

Technology is supposed to be a means to various ends. Yet, certain developements would indicate that technology is used as an end-in-itself, in certain cases simply because we have the knowledge and the means available. The concern with this approach is whether the sacrosanctity of phenomena that are ends-in-themselves is acknowledged or respected in the technological setting. Furthermore, should technology be applied to these ends-in-themselves?

The traditional conception of technology was that of a collection of technics. These were conceived of as instruments or means for the attainment of human fulfilment. In this sense technology was considered to be a tool or means for our use; it was something neutral, an ordering towards the end of the greater good (17: p. 79; 51: p. 347). In his thesis on eudaemonia and what contributes to the flourishing life, Aristotle (4) distinguished between making and doing, referring to these as *poiesis* and *praxis* respectively. He believed that 'doing', that is, participating in pursuits such as sport,

politics and contemplation, was the most properly human realisation of our capabilities (30: p. 283). Our captivation with technology though, raises questions of whether our 'ends' are currently manifested in making rather than doing. The tendency to continually create new, more advanced means or techniques has obscured, if not in fact nullified, the question of ends. Technology is no longer merely a mass of means, it is a world-view inculcated in our modern language, our attitudes, purposes and daily experiences (2: p. 309).

Grant (2) champions Nietzche as the philosopher of technological civilisation par excellence. He states that Nietzche believes in "the will to power, mastery of the earth, control of nature as an end-in-itself" and also that "The Nietzchean will to power, or willing with no end beyond willing or mastery, is the fitting doctrine of our age" (2: p. 302). Herein lies the problem. Ethical considerations require that technology remains as a means-to-an-end. The threat emerges when it appears that technology is employed as an end-in-itself. This has occured as a consequence of the attitude that 'We *can* do this therefore we will'. The most pressing question though is '*Should* we do this simply because we have the know-how?'. As Ortega y Gassett says in his discussion of our technical capacities, "Being able to do something is not a sufficient reason for doing it" (77: p. 305).

Ellul (31) and Cerezuelle (19) both hold the belief that technology pursues no given end and acknowledges no moral limitations. Ellul says that the assumption that technique progresses with the end of human good in mind is incorrect since technology has no tendency towards human ends. Likewise, George Grant believes that technological society is not one in which political, philosophical and caring beings can flourish (2: p. 299). If Ellul is correct in his statement that technology tolerates no moral obligations and has no teleological direction, then it must be questioned whether technology's putative vision of seeking the good and betterment of human life is possible.

Borgman (13) also believes that technology no longer provides the ends for human life since the emphasis on cultivation of human excellence has shifted to one of mere making. When involved in 'making', we are only realising our technical abilities. He argues that it is focal practices that provide for the ends for which we live. He does not endorse an overthrowing of, or technophobic attitude towards technology, but calls for a return to an instrumentalist approach whereby technologies are put to *appropriate* use.

Automation is the proper end of a purely mechanical system, not of humans. Their ends are to be found in self-direction and fulfilment, choice, will, and, above all, their autonomy (74: p. 85). In seeking the well-lived life humans actualise their being through those practices and concerns that are distinctly human. Hans Jonas believes that Being is imbued with purposiveness and he calls for a return to Aristotelian ontology (9: p. 344).

Davis (24) states that the technicians, like the humanists, are able to use an Aristotelian eudaemonic rationale for perpetuating technological growth. They see technological innovations as an "unfettered expression of human will" (24: p. 29). The consequences of human action are inconsequential in this view since it is the person's assertion of independent will that proves him/her to be human. This is irrational though since it does not acknowledge whatsoever the basis of morality in civilised life (24: p. 31). To define freedom in this way is basically to assume the right to destroy humanity itself. Nuclear warfare, for instance, is an example of 'asserting one's will'. This conception of human freedom is paradoxical since, if this kind of technology is employed it results in the elimination of human freedom and amounts to technological nihilism. As Hood has stated, the ends of science must include the end of the good for humankind (51). The employment of new technologies must present itself as a finite task because all life is finite (19: p. 14).

The question we must ask is, are we so implicated in a technological reality that rather than 'freeing' us in order that we may realise our existence, technology in fact defines our existence? This implies reduced possibilities for exercising choice in a technological reality. Another related consequence is the homogenisation and attenuation of certain things and experiences.

Consequences of certain uses of technologies

One consequence of the current technical-materialist interpretation of humankind is the establishment of uniformity. This involves the structure of standards, routines and procedures, and a predilection for the efficient production of identical objects (79: p. 19; 2: p. 303). When deprived of their internal aspects, activities, work, artefacts and experiences suffer homogenisation or attenuation. That is, phenomena that are differentiated and are valuable for their internal meanings or as an expression of

individuality become similar (94: p. 20). Already apparent is the multitude of simulated experiences or objects made available by complex productive apparatus of technologies which illustrate the shift from 'doing' to 'making'. Leiss (60) claims that this homogenisation effect has had a negative effect on what we believe to be our needs. That is, we seem to 'need' so many things that not only do the objectives of our own desires become obscure but we exhibit an indifference towards the particular qualities of things. Leiss offers the example of plastic trees. Able to provide only a mere simulacrum of the 'real thing', they also don't require our attention or care (60: p. 44). To concentrate on common ends means the neglect of peculiar means. Take the fine arts for example. Art galleries exist as 'shrines' to the magnificence and splendor of individual human endeavours displayed in the manifold works of art. If there was nothing intrinsically exhilarating, nothing that 'moved' us in experiencing such places, in viewing the 'real thing', then surely a visit to the local print shop or even the simple procurement of an illustrated art book would suffice.

On the topic of the ability of technology to simulate certain things, another interesting technological development is that of 'virtual reality'. Virtual reality is the latest phenomenon that creates a 3-D sensory experience. This is achieved by means of a person wearing a helmet, gloves and bodysuit that are fibre-optically wired, allowing the person a particular experience through stimulation of all the senses including touch and smell (102: p. 5). Macintyre has said, with what appears to be a keen critical insight, that "virtual reality will...make you think you are actually doing the things which you could, if you were not addicted to technology, actually do" (66: p. 21). Dr. Slaughter, an expert on the study of the future at Melbourne University perceives life at the end of this century as being "...a very emotionally needy time" (102: p. 5). His prediction that computers, television and virtual reality will replace human relations does not appear far from the truth considering we now have teledildonics. Teledildonics - the sex of tomorrow- is virtual reality sex!

For those disenchanted with life, virtual reality will be the sophisticated, accessible way to bring escape and release from discomfort. Yet again, rather than addressing the issue of dissatisfaction from a humanistic or philosophical perspective, we have turned to technology to provide the answers. MacIntyre cynically proposes that next there will be virtual relationships, virtual conversations and virtual friendships (66: p. 21). Virtual

reality is only an existence provided by machines. To embrace innovations such as virtual reality is to allow ourselves to be fulfilled by technical means. It is to forsake spiritual and cultural goals for technological advance. Ease must not be mistaken for happiness. Encroaching upon different realms of culture technology has transformed much of the involvement with values and meaning to efficiency and convenience alone resulting in an 'atomising' of society (58: p. 51).

A quest for efficiency, productivity and uniformity can only result in what Charles calls an increasing 'mechanisticity'; the replacement of human functioning by mechanical gadgetry (20: p. 279). Mumford, projecting into the future, poses the possibility of human aptitudes and development being transferred to an "externally controllable mechanical system" with an "over-concentration upon centralised power" (74: p. 84). He raises the question of the compatibility of further technological developments with full *human* potentialities. Humankind's essence cannot be exemplified by the technician. The organisation of human potential into methods, technicalities and statistical procedures creates a standardisation that lacks individuality and perpetuates attenuation of social structures (31: p. 120). Critics have also claimed that technology reduces our possibilities for choice since we are so dependent upon it.

Possibilities for Choice

Borgman (13) says that the scope of each individual's action is founded in the occasion of decision, but technology has limited our choices. Our technical complicity has meant that technology itself is not a choice, but a basis for choices. It is insinuated at the basis of the occasion for decision. Those who invent and implement technologies are the relative few in the position to make choices that affect the majority. Each of us is affected and shaped somewhat by the rule of technology in the form of procedures, devices, process and institutions (104: pp. 85-86). For instance, in discussing technique, Ellul states that the individual has also been reduced to a virtual 'device' for recording the data and effects of techniques. He or she can decide only in favour of that technique that offers the greatest efficiency. In this sense, the individual is no longer an agent of choice (31: p. 80).

To decide between engagement or disengagement is to make a genuine choice; it is to decide between confirming or protesting against the rule of technology. But our

implication in technology, which even conditions the ways in which nature and culture are made accessible, has created a normalcy that has exchanged 'engagement with things' for the 'consumption of commodities' (13: p. 104). And if we are irredeemably dependent on our 'supernature' we in effect have no choice of whether to accept this 'supernature' or to live in nature (77). The problem is that of our social paradigm, entrenched in a technological reality which informs but also forms the basis of our choices.

Winner (104) cites an interesting example provided by the research of Pertti J. Pelto to demonstrate the problems that may arise when we allow technology to define our choices. The introduction of the snowmobile in the 1960's to the Skolt Lapps of Finland was considered an economically beneficial innovation in the rounding-up of reindeer. Note that reindeer provided the basis of their economy. But along with the economic benefits gained in being able to round up deer in a single operation (it was traditionally done with skis and dog-sleds), the new implement produced negative ecological and social side effects: strains placed upon pregnant reindeer by these mechanised roundups resulted in a decline in the herd population; and maintenance of the snowmobiles became too costly. The older herders who opted for their traditional methods faced unemployment. What resulted from the 'success' of these new methods was the creation of an inegalitarian society shaped by desire for increasing consumption of the new material innovations such as washing machines, cars and telephones. Thus, the Skolts, although 'choosing' to adopt this new method of production did not choose or intend the modification of their traditional socio-economic system. This study illustrates technological determinism versus genuine choice. Discussing Pelto's study, Winner says that "strongly suggested in his study is the crucial difference between *choices*, properly considered, and *adaptative responses* to the conditions brought by a new order" (104: pp. 86-88).

If one asserts independent will in making choices, it is necessary to also enquire and attempt to estimate the results or consequences of one's choices. The technicians' endorsement of technological innovation as being consistent with human nature, as the free expression of human will is contrary to the very basis of our moral and civilised life which demands that, the will of duty or to power, be mastered by ethical controls (24: p. 32). Under a positivist technical rationality, individuals often lose sight of values and

moral obligations. Morality is in certain cases only perfunctorily applied in justifying motives for new technological developments (e.g. genetic and psychological engineering). This suggests a diminishing of the value system that provides for appreciation of internal goods and the ability to live a flourishing life.

Values

There are two important reasons why our values system needs to be examined. It is a common misconception that certain problems of technological developments are solely technical. For instance, in discussing sophisticated defence research and technologies, Suzuki points out problems with the software used in the Strategic Defense Initiative (SDI) of the U.S.A. He quotes David Parnas, a scientist who does defence research for the U.S. military as saying:

> Fire control software cannot be written without making assumptions about the characteristics of enemy weapons and targets. No large-scale software system has ever been installed without extensive testing under realistic conditions. Even with these tests, bugs can and do show up in battle conditions. It is not unusual for modifications to be made in the field. Such opportunities will not be made available in the thirty minute war - difficulties in building software increase with the size of the system, with the number of independently modifiable subsystems, and the number of interfaces. (95: p. 96)

Suzuki assumes that in order to overcome the problems Parnas discusses, the military will strive to develop further technologies since:

> ...politicians find it difficult to weigh moral and ethical considerations about escalation of the arms race against more concrete suggestions of potential jobs, promises of high-tech spinoffs in the civilian sector and concerns about Soviet military advantages. (95: p. 93)

Such technical issues are ultimately laden with values questions. When a technologically-based existence is preferred, for example, to a spiritual existence this necessarily involves value judgements, simply because one way of life is considered and measured against another (67: p. x). Why a technological reality is preferred over a spiritual one for example, is the second reason our values system needs to be examined.

Current times are characterised by an overt commitment to quantitative and material progress. From the technocrat's viewpoint values are merely subjective feelings. Social, ethical and aesthetic questions are taken into consideration only *after* certain technological developments have shown risks or deleterious consequences. The

technocrat's prime value lies in quantifying and objectifying the material world. To reduce the world to scientific and objective interpretations though is to negate the intrinsic meaningfulness of spiritual, aesthetic and ethical understanding.

A scientific rationality is unsympathetic to spiritual disciplines since these are not concerned with control and they approach life non-acquiringly. Spirituality cannot be technologised. Drengson (27) uses the practice of Buddhism to illustrate this point. Buddhism's prime focus is on living simply and virtuously. It stimulates a flourishing of various arts and respects other 'beings' (of nature). Conversely, in technologically-advanced societies, "Out of unkowing ignorance we wrongly try to complete ourselves through the acquisition of other beings, things, knowledge, of merits, of awards, of wealth, fame and power" (27: p. 268).

Spiritual disciplines recognise and value the sacrosanctity of individual phenomena. To recognise that something is sacred is to value its intrinsic worth. But in a culture dominated by technism much is compromised or at worst sacrificed to material progress (6: p. 203). The practice of virtue is an accomplishment that allows us to transcend greed, power, control and disrespect. An appreciation of the virtues helps us to answer non-technical questions and provide for meaningful understanding of things. Spiritual or intrinsic needs are concerned with moral obligations, beliefs in certain faiths, self-esteem, self-actualisation and intrinsic fulfilment (94: p. 26). Yet, as Borgmann states with regards to traditional values and virtues, "...there is little in the technical universe that they can anticipate and ready us for" (13: p.224). What is required is a re-orientation towards values that offer a meaningful, well-lived existence free from unreflective narrow decisions that perpetuate the pressures to achieve, control and acquire. Machines, devices, formulae and applications cannot answer questions nor solve problems concerned with a value-filled life.

A more egalitarian society is one of the promises of technological developments. Social and economic equality may eliminate or significantly reduce competition for scarce rewards and this in turn may allow activities to be engaged in for their own sake. However, ideals of economic or social equality provided by an affluent technological society must not be confused with values that allow for fulfilment of a truly human existence, that is to say, self-actualisation. Technological progress cannot be our sole and binding point of reference (96: p. 47; 84: p. 155; 27: pp. 262, 263, 267). Human

life does not display itself in materialistic terms; it is moral considerations that confer a meaning and unity upon life (22: p. 311).

The technocrats may be able to explain the 'what' or 'how' questions of technical actions, but a contemplative humanism enables us to discuss the 'why'- the *meaning* of technical decisions (84: p. 3). When technology is seen only as the organisation of knowledge into the development of techniques for practical purposes certain factors are neglected. Technology cannot be discussed in simplistic terms as merely a 'machine'. Not only must we consider the techniques or mechanisms themselves but also the values involved in the decisions made to implement new technologies. As will be done in the next chapter, we must consider whom or what they may be applied to and the potential consequences of such applications (82: p. 54).

Technological developments are implemented to achieve certain objective ends, but the political, social and ethical implications always require us to ask 'Whose ends?' When humans become objects of scientific experimentation and applications, they become end products of technological culture (6: pp. 201, 203; 84: p. 155). When scientific discoveries are revered for increasing human power and control over the environment and *each other,* the significance of the realms of sense-qualities, morality and aesthetic values are marginalised and assigned to the 'subjective' and 'unscientific' (61: pp. 109-110). To consider 'ends' is to reflect upon and respect not only persons but all life forms. It is to treat each as autonomous beings, as free agents, not objects to be manipulated without consent for the ends of scientific experimentation and control (27: p. 266). To disregard humanistic values is to be ignorant or at least unaware of a truly human existence (94: p. 34).

If we 'disengage' ourselves from the technological bind, we open up our possibilities and free ourselves to exercise choices that do not have to be provided by technological means. Self-actualisation obtains realisation in experiences and activities that are not related to goods exchange (60: p. 57). Science and technology allow for an understanding of our material world but they do not provide for an understanding of self.

Conclusion

It has been argued that when technology is developed and used in a certain way, that is, as an end-in-itself, we risk undermining those ends such as the experience of internal

goods, the fulfilment of spiritual needs and the pursuit of practices that contribute to a greater good - a meaningful well-lived life. Accounts of the ethical narratives of Aristotle and Kant provided the ethical and moral construct in which these and other issues could be addressed. A discussion of those ends-in-themselves such as focal practices, virtues, and respect for persons demonstrated how they contribute to the good life. An understanding of those phenomena considered to be ends-in-themselves provided a basis from which technological ends could then be critiqued. The intention was to distingiush what it is we value in phenomena considered to be ends-in-themselves so as to be in a better position to argue that certain technologies are dehumanising.

Through a critical assessment of the ends of technology and human ends, it has been argued that the relentless pursuit of new technologies has subverted humanistic values and marginalised our spiritual needs. In embracing new technologies we have been unwitting accomplices in restricting our own freedom of choice; our choices are, in fact, not so much real choices as adaptative responses to an increasingly technological environment. Of course we are often witting accomplices but have been wrong in some of the choices we have made and regret the unforeseen or unanticipated consequences. An explanation of the shift in our values has illustrated how our technological complicity has created a lack of understanding and respect for ends-in-themselves (internal goods included) and has resulted in the erosion of traditional values that contribute to a meaningful life. It was further argued that the scientific, empirical and material aspects of life hold a supremacy over humanistic values. As a consequence, we continue to seek materialistic satisfaction by means of external goods whilst we neglect fulfilment through intrinsically satisfying pursuits.

It would be naive and foolish to propose that we renounce all things technological. Such a proposal was not intended within this chapter nor is it advocated by the author. The intention here was to address the threat of technology becoming an end-in-itself and to consider the consequences of this. Morgan (71) and Borgmann (13) both argue that what is needed is a paradigm change, a reform *of* and not merely within technology. If it is impossible to accommodate the Aristotelian notion of the flourishing life, then what is still required is a new conception of the 'good life' that provides for a balance between the material possibilities of our contemporary age and those genuine possibilities that

allow for expression of the well-lived life (71: p. 420). Under these conditions technology may be restricted to its proper sphere, assigned to the periphery of focal things and practices (13: p. 220). What is needed is a re-appraisal of our social ethic and its assumptions of what constitutes the good life.

It is the purpose of chapter four to explore the notion of sport as a focal practice in relation to issues that have been discussed within this chapter. Sport, as discussed within chapter four is considered an end-in-itself. The consequences of applying technology to sport and the ethical implications of this will be critically examined.

CHAPTER IV

SPORT

The purpose of this chapter is to examine the relationship between elite level sport, technology and ethics. Chapter two explored our technological reality and the influences of technologies within contemporary society. Chapter three focused upon ethics and those phenomena that are respected and valued for their intrinsic worth and thus considered to be ends-in-themselves. Within this chapter, the influences of technology are examined specifically in elite level sport, understood within this study as able to be pursued as an end-in-itself. An overview of a number of developments in sport sciences is presented to illustrate the importance of the relationship between sport and technology. In particular, the field of biomechanics is covered in greater detail since it involves some very progressive technologies applied to both sporting practices and athletes. The notion that sport is intrinsically valuable, is an end-in-itself and a focal practice, is central to the argument that certain technologies threaten sport. Three issues in particular: genetic engineering, the use of performance enhancing drugs, and certain sports psychology practices will be critiqued in view of the claim that certain uses of technology threaten the very ethos of sporting practices and the personhood of the athletes. This claim will be evaluated, using the normative criteria established in chapter three based upon the ethics and moral philosophies of Kant and Aristotle.

There is a parallel that exists between elite sport and technology based on the principles of efficiency, productive outcome, and the best possible performance. Technological developments provide the possibilities for athletes to further improve their performance. These technologies are progressive in the sense that once records are broken new technologies may be developed to break *those* records. It is claimed here that instrumental rationality and adoption of market norms by sports institutions threaten the integrity of sporting practices and vitiate athletes' motivations in the pursuit of victory. In international sports competitions this 'performance principle' has created moral and ethical dilemmas, particularly evident in the 'doping debate'. In questioning the reasons for applying technologies to sport, a forum is provided in which we are able to firstly understand the social constructs in which decisions to use them are made, and secondly, to question the application of technologies to other activities and practices also

considered to be focal practices. Thus, sport is used here as a paradigm case for the wider community.

Elite level sport is quite different, however, to other focal practices that have undergone technological transformations. This is because it is not only the activity but also the *human* (athlete) who is undergoing technological manipulation. Applying technologies directly to the person thus creating transformations of human identity has serious moral and ethical implications. The possibility and potential for genetic engineering of 'super-athletes' is perhaps the peak of technological intervention in sport. The claims of one author in particular, John Hoberman (49), that athletes are already being used as surrogate experiments for scientists will be examined in respect to the issue of inappropriate uses of technology in elite level sport. The implications of these developments and the ethical questions they raise regarding the motives for such technological developments and the aims to which they aspire are just as important for the wider community as they are for the sports community.

One of the main aims of this chapter is to offer a humanistic rationale, using the normative criteria of virtue, intrinsic goods, self-determination and respect for persons, that will provide a foundation for questioning the appropriateness of certain technological applications in elite level sport. It is intended that this rationale will be applicable to other practices and areas of life where technology has had a pervasive influence.

Sport as a Focal Practice and a Social Practice

It was stated previously that sport, in this particular study, is considered as an end-in-itself. Borgman's and MacIntyre's notions of focal practices and social practices respectively, are fundamental to the conceptualisation and understanding of sport as an end-in-itself. Sport, when conceived as a practice in these terms, provides the milieu in which other ends-in-themselves such as internal goods, virtues and personhood can flourish. Two factors crucial to MacIntyre's concept of a social practice are internal goods and virtues. Internal and external goods will be briefly re-addressed here in relation to sporting practices, since they are particularly relevant to MacIntyre's distinction between practices and institutions. The importance of the virtues in social

practices will be discussed at a later point, in conjunction with the other normative criteria.

Borgmann's notion of focal practices was discussed in chapter three. A focal practice is one which provides for engagement and a 'focus' in the unity of a life. Borgmann uses the example of a distance runner to demonstrate this. He says that, "...in the runner, effort and joy are one; the split between means and ends, labor and leisure is healed" and that "...the unity of ends and means, of mind and body, and of body and world is one and the same" (13: pp. 202-203). An understanding of focal practices can be informed by a reading of MacIntyre's definition of practices and internal goods. Indeed, Borgmann uses MacIntyre's definition in his discussion of focal practices (13: p. 208). MacIntyre defines a social practice as:

> ... any coherent and complex form of socially established cooperative human activity through which goods internal to that form of activity are realised in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of activity, with the result that human powers to achieve excellence, and human conceptions of the ends and goods involved, are systematically extended. (65: p. 187)

A sports competition can be characterised by both external and internal goods. Internal goods are an intrinsic component of a practice and may be experienced by both losers and winners, since internal goods form part of the intrinsic value of participating in a particular practice. Engaging in a practice and extending oneself to achieve excellence is to recognise the internal goods of that practice (65: p. 190). Schneider and Butcher argue that, "one achieves the internal goods through the exercise of its skills and through experiencing the world created and defined by the sport" (88: p. 72). External goods are external because they are contingent to the practice and may be achieved by other means (65: p. 188). The internal goods one experiences in perfecting a backhand in tennis, for example, can only be experienced by participation *in tennis*. However, the external goods that one may attain in tennis competitions, such as status and wealth, may be achieved by alternative means. Internal goods are social goods for the community; external goods are individual goods - "they are always some individual's property and possession" (65: p. 190).

MacIntyre cautions that practices must not be confused with institutions since the latter are primarily concerned with external goods. Institutions are those bureaucratic bodies

that administer and govern their respective practices which are financially dependent upon them. Institutions are concerned with both the acquisition and distribution of such things as wealth, power and status - things which have nothing to do with the internal goods of practices (65: p. 194). In support of his critique of "the lop-sided market orientation of late capitalism" Morgan (72) uses MacIntyre's practice-institution distinction. He says that the position of elite level sports as both business enterprises and as competitions between participants seeking excellence creates problems when the influence of the institutions overshadows the practice (73: p. 130). The instrumental approach of institutions towards their practices supplants both the logic and the intrinsic goods of practices with the market driven logic and goods of the institutions (73: p. 130). This rationalisation of sport has created what Loy refers to as a mutation in attitudes and motives for participating in top level sport (63: p. 160). That is, the introduction of lucrative external rewards such as fame, careers, finance and publicity too frequently become the end goal of competitors. Morgan says that treating sports as means to attain external rewards:

> ...destroys them by installing market norms and its train of external goods as the proper ends of sporting practices, thereby depriving their practitioners of any reason... to value or engage the particular competitive challenges they present, the select athletic skills they call upon and the human qualities and virtues they excite. This encroachment... bastardizes the whole point and purpose of its practice. (73: p. 147)

Although modern sport still holds a set of ethical imperatives including formal rules, moral codes and peer sanctions, the traditional values of excellence, honour and virtue do not appear to command the same respect they once did. They are seen more as "ideological leftovers" (63: p. 163). This is a consequence of the overvaluation placed on the external rewards of success. As Heinila claims, "The greater the pressure to succeed, the more likely the use of dubious means" (44: p. 28). As will be discussed later, this is apparent in what has become known as the "doping dilemma" -the use of proscribed performance enhancers by elite athletes.

This instrumental approach of institutions towards their practices subjugates the value of intrinsic goods. It vitiates the motivations of the athletes by focussing too much on achieving new records and the subsequent external rewards, and disregards the importance of the role of virtues in practices. This approach threatens the integrity and

ethos of sport and the relationships between athletes. Morgan has provided a succinct definition of the ethos of games. He states:

> By the ethos of the game I mean those attitudes, commitments, values, goods, and virtues that are necessary to sustain the ways of life embodied in sporting practices. In its most basic sense, the ethos furnishes a compelling reason to make the gratuitous difficulties of such practices the central part of one's engagement in them.... The ethos speaks to the good of the kind of life embodied in sports and the special regard for and commitment to its particular qualities of action. It speaks as well to virtues such as justice and honesty whose exercise is crucial to the integrity of sporting practices. (73: p. 224)

An account of sport as both a focal and social practice grounds certain evaluative normative criteria. A social practice, as defined by MacIntyre, provides "... the arena in which the virtues are exhibited" and "... is crucial to the whole enterprise of identifying a core concept of the virtues" (65: p. 187)

Normative Criteria: Virtues, Personhood, Respect for Ends-in-Themselves

Considered as a quest for excellence, sporting competition requires the possession and practice of virtues which enable the competitor to achieve those goods internal to the practice. It was explained in the last chapter how the virtuous, rational person experiences internal goods, whereas the irrational person is unable to, since they do not value ends-in-themselves. MacIntyre (65) believes that the possession and exercise of the virtues such as justice, courage and honesty enable us to acquire internal goods. Conversely, a lack of virtuous action inhibits us from achieving any such goods since the activity or practice serves only as a vehicle for achieving external goods (65: p. 178). Thus, Macintyre claims that without virtues there can only be recognition of external rewards.

A practice is never merely a set of technical skills. Each practice is partially defined by its internal goods which make that practice distinctive. It is embodied with standards of excellence, tradition, internal goods and virtuous action. Practices could never flourish, says MacIntyre, in societies in which virtues were not valued since the kind of life embodied in a practice can only be experienced by the virtuous person (65: p. 193). This person respects both their sport and his or her fellow participants as ends-in-themselves. Such respect, Morgan (73) says, would necessarily include the virtue of trust as well as courage and honesty. To engage in a good sporting contest, athletes

would need to depend on the trustworthiness of their team-mates and their opponents since a "lack of virtuous action jeopardizes the very rational standing of these practices" (73: p. 134). Thus, the virtues are those internal goods by which practitioners define their relationship to other practitioners who recognise and value the kind of life and excellences embodied in a practice (65: p. 191).

Chapter three included a discussion of rationality and autonomy with respect to those phenomena considered to be ends-in-themselves. Virtues, intrinsic goods, practices, and persons share a commonality in that they are all considered ends-in-themselves. Respect for persons, as a fundamental moral principle, means that we treat as our own ends the ends of any individual who is an end-in-his or herself (26: pp. 21, 23). As a person, each individual is a centre of original being, thought and action subject to responsibilities, rights and duties to self and others (99: p. 1207). The Kantian thesis states that the possession of a rational will involves both the theoretical and practical uses of reason. This involves the ability to choose for oneself and to carry out decisions without undue reliance upon others. The rational will is free when the person is able to be self-determining by governing their conduct according to universal moral rules; and for athletes this also includes the rules of the competition. Rationality is a prerequisite for responsible action. Having chosen a course of action, rational agents must know what they are doing and have reasons to justify their decisions and actions.

It is claimed in this study that those athletes who choose to employ certain technologies, prohibited or otherwise, in the quest for external rewards, are acting irrationally. Yet, there is nothing wrong or inherently bad with external goods. As Schneider and Butcher (88) have said, to accept external rewards does not necessarily mean that an athlete is unable to experience the internal goods, or does not love and value their sport . It is usually the case that most athletes do what they do simply because they love it (88: p. 68). The concern here is that the quest for external rewards may threaten the integrity of sporting practices and the use of prohibited means changes the nature of the competition. A quest for external goods alone is likely to entail a lack of respect not only for the practice itself but for other athletes, and thus it is irrational. Likewise, Morgan says that, "to conceive or treat sport as a mere means to the attainment of external goods vitiates its rational core" (73: p. 228).

The growing emphasis upon external rewards has led to greater technological encroachment within the sporting arena. Borgmann has said that practices that serve external goods are subvertible by technology (13: p. 208). He believes that focal practices must protect what is central to them; they must resist the "technological diremption into means and ends" (13: p. 209). The use of technology in sport, though, does not necessarily mean that it is no longer a focal or social practice in the ways discussed above. Certain technologies can enhance both the practice itself and the experience of the participant. Technological applications are not outrightly synonomous with a quest for external rewards. However, certain technological applications are definitely questionable. Genetic engineering, the use of performance enhancing drugs, and certain sport psychology practices are considered to be detrimental to both the athletes and the sporting practices. It is argued that they threaten the ethos of sport and the integrity of relationships between athletes, and they disrespect personhood. Claims that they are harmful and irrational will be evaluated using the normative criteria just discussed.

Positive uses of technology in sport will then be reviewed to show ways in which technology may be used without compromise of either the sporting ethos or an athlete's personhood. It is important that we recognise the social constructions within which decisions about implementing new technologies are made. It is imperative that caution be employed since we tend to pre-validate new technologies, only assessing their 'success' once they have become firmly entrenched in the social infrastructure.

Inappropriate Uses of Technology

Certainly, techniques used in sports science and sports medicine may be regarded as worthwhile if they enable an athlete to modify and improve performance without undue risk of injury, or without compromise of their personhood. Problems do arise however when the athlete is treated in a manner that disrespects their autonomy, threatens their ability to be self-determining, or subjects them to potential unnecessary risks. The shift of emphasis from assessing the human organism to boosting whichever capacities possible is founded on the idea that the athlete can be 'freed' from performance inhibiting restraints and thus transcend the normal state. Yet, those who support technological intervention in elite sports with the argument that it provides greater freedom to reach our human potential fail to appreciate the possible paradox that athletes who are

'liberated' by technology in order to be faster, stronger and higher may become *dependent* upon that same technology. Whilst dependency is not inherently bad, certain dependent relationships may be problematic. Dependency, in the context used here, is regarded negatively since it is seen to have a detrimental effect. If an athlete becomes so dependent upon technology in order to perform, he/she may be compromising his/her autonomy.

Is the physician, asks Hoberman (49), serving the athlete as a person separate from his or her athletic self or is he/she there merely to treat that person solely as an athlete for whom they must maximise performance? Genetic engineering, certain sport psychology practices, and the use of proscribed drugs will be critiqued here to support the claim that certain technological applications are inappropriate on ethical grounds.

Genetic Engineering

As the next logical step for the sports sciences, Hoberman (49) believes that genetic engineering promises to bring about the most profound biological transformations of humankind and states that it is likely that it will be used to develop athletes before any other human performers. Athletes will be the most likely experimental subjects since they are the obvious choice for the testing of performance related traits. He states that the current crisis of high performance sport is a consequence of "the inseparability of sportive training from the scientific ambitions of our civilisation (49: p. 19). He refers to the continual upgrading of records as the "progressive logic inherent in sportive effort..." (49: p. 20).

The idea of a genetically engineered super-athlete has been referred to in the literature so often that it is almost passe. Gerrans proposes that genetic engineering could lead to "artificial banks of genes from champion athletes and the creation of super athletes capable of far exceeding present physical limits" (37: p. 91). Claude Bouchard likewise believes that the latest biotechnologies will see embryo selection becoming a reality in the sports arena (14). Dr. Arthur Caplan at the Centre for Biomedical Ethics at the University of Minnesota has said that "the worst possible ethical evil of all this [genetic engineering] would be to create lives simply to end them and take the parts" (80: p. 4). Dr. Stephen Delaney has said that with technology we can engineer the human species just as easily as plant and animal species (37: p. 91). He says that this is a disturbing

thought, but like many authors, he carries the discussion or questions no further. The implications of using genetic engineering inappropriately have already been addressed in chapter three. The issue has been mentioned here as an example of a technological practice that may be deemed inappropriate not only in the sports arena but for the community generally since it is not concerned with reducing human suffering.

The moral and rational capacities of human self-consciousness allow us to transcend being merely humans to being persons. So how do we reconcile our rationality and morality with human experimentation? The publicly condoned violation of the sanctity of even one person, as may occur in genetic manipulation, is counter to the interests of all persons (21: p. xiii). To apply science to persons as if they were 'things' is to disrespect the personal value of the individual since a person is distinct from a mere thing in that we possess a rational will. This kind of experimentation not only ignores the exercise of reason in the best interests of humankind, it represents the ultimate treatment of a person as a mere means to an end; technology in this instance is used as an end-in-itself. The reverse should always remain the case.

Sports Psychology

Sport psychology is not new but it only became a major area of study and research from the 1960's onwards. The three main areas of sports psychology are motor learning, sport psychology and exercise psychology. Generally the focus of sports psychology has been on personality, social psychology, motivation, emotion, and performance enhancement strategies. Areas of research interest include mental training, anxiety and arousal, stress in performance, group dynamics, and aggression (91).

Hoberman (48), a strong critic of certain sports psychology practices, believes that certain medical and scientific practices in elite level sport are manipulative and instrumental rather than therapeutic, and questions whether these practices are humane or functional. He believes that certain practices aimed at enhancing sport performance are not employed with the well-being of the athlete in mind. The main concern is to promote athletic success, "success" being the operative word. In reference to the technological norms being applied to human behaviour to promote ever-increasing productivity (performance), Hoberman uses the term "psycho-engineering" - the idea that the mind can be manipulated to improve athletic performance and that these

manipulations can be understood in a scientific manner. The idea that the athlete can be liberated from performance-inhibiting restraints, that he or she can transcend the normal state, is the romantic core of modern sports psychology (49: p. 187).

Hoberman lists certain sports psychology practices: behaviour modification techniques; somatic procedures like biofeedback, progressive relaxation, and anti-anxiety drugs; cognitive-behavioural procedures such as rational-emotive therapy, cognitive restructuring, and hypnosis; stress management; goal setting; positive thinking; and the "covert rehearsal" strategies better known as "visualisation" or "mental practice" (49: p. 188). He says that these techniques and the promotional campaigns that sell them are more significant as cultural trends rather than as demonstrably effective factors in high-performance sport and that the more interventionist techniques such as hypnosis have become a familiar if scientifically unproved part of high performance sport. Sports psychology, he believes, is merely "an eclectic group of theories and therapies in search of respectability" (49: p. 188).

Hoberman gives an anecdotal account of a young West German racing cyclist who consulted a psychologist. The reason for the visit was his fear of cycling down mountainsides at 100 kilometres an hour. Although the professor believed it was possible to perform the "psychosurgery" to rid him of his fear; he refused on ethical grounds (49: p. 154). Such intrusive techniques as this compromise personhood because the athlete is treated as a mere means to attain a scientific end. There is good reason for fear to exist in certain situations, in this case for safety purposes at least. Whilst some sports do carry inherent risks, and part of the sense of thrill and achievement is the overcoming of risks through skilled performance, there are always limits which must prevail. The possibility of injury or worse, fatality, may be increased if experiments such as "psychosurgery" are permitted or encouraged. The sports community needs to concern itself with formulating reasonable limits within its particular sport. It needs to consider what are appropriate or inappropriate risks. For instance, age is an important factor in deciding how far to push an athlete both physically and mentally,or whether they have the necessary skill and strength to perform particular skills.

Another example Hoberman uses of "psycho-doping" is described by the German psychologist Henner Ertel:

> Through a receiver in one ear we send a continuous barrage of nonsense questions to the part of the brain which handles conscious perception, until it has virtually ceased to function. Simultaneously, through a second receiver in the other ear, we send simple messages to the unconscious which penetrate directly because the conscious mind is blocked off (49: p. 187)

Hoberman claims that the aim of sports psychology is to remove thought itself and that this is the anthroplogical dimension of sports psychology. This ideal model of the human organism possesses an unmistakable charisma in a technologised world. Visuo-motor behaviour rehearsal (VMBR) for instance had the goal of effecting a fusion of mind and body to produce perfect physical movements. This attempt to triumph over classic mind-body dualism is the "holy grail of sports psychology" (49: p. 188). This infatuation with technique treats the athlete as a one-dimensional being.

For Hoberman the main issue is that the assimilation of sportive function to a technological model has not been questioned or assessed in an ethical framework. The efficacy of many procedures is taken for granted, which implies an irrational, that is, unexamined tendency to assume that invasive or "surgical" procedures are effective ones. Whether they are effective or not they are ultimately concerned with fundamental ethical questions of what a human being is and what can and cannot be done to it (49: p. 187).

Drugs in Sport

Perhaps the clearest example of the 'success logic' promulgated by technological developments is the use of various prohibited performance enhancing substances in sport. This now established practice in elite level sport is a clear manifestation of the 'win at all cost' ethic, itself a result of the pursuit of external rewards. Schneider and Butcher (87) refer to the current doping dilemma in elite level sport as a "crisis of values" and claim that technology has outrun our moral intuitions. They claim that no amount of bans will ever eradicate drug use. Hoberman believes that athletes, officials, coaches, sponsors, politicians and physicians have neither the power nor the will to eradicate doping from sport since in today's societies performance enhancing drugs are an inevitable part of technological progress. At least three decades of doping have shown that the problem cannot be eradicated, particularly since the IOC Medical Commission already tests for no fewer than 3,700 banned substances (49: p. 266)! Furthermore, the professionalisation of the Games, the harsh Olympic qualifying

standards and even the Olympic motto itself (Faster, Higher, Stronger) have all contributed to the doping problem.

Schneider and Butcher (87) say that what is needed is a clarification as to why performance enhancing substances should be banned. It is not so much a clarification that is needed as an actual rationale since the justifications for the current bans have been shown to be flawed. Brown, (15; 16), Simon (92) and Fraleigh (36) have each tackled the moral issues concerning drug-enhanced performances in sport using the arguments of harm to self and others, risk, coercion, fairness (unfair advantage) and health. Roberts and Hemphill (85) however have pointed out inconsistencies in these arguments. Schneider and Butcher (87) examine some justifications that are frequently given for the bans, and then present counter arguments. These justifications are: 1. the argument that use of performance enhancing substances gives the competitor an unfair advantage since it is against the rules and constitutes cheating 2. Performance enhancing drugs cause harm to the athletes. 3. Drug-use perverts the nature and corrupts the values of sport. 4. Doping substances are de-humanising.

The above rationales are easily refuted. In the first justification for instance, the argument that drug use constitutes cheating still does not clarify nor explain *why* performance enhancing substances are banned in the first place (that is, why not simply allow use of performance enhancing drugs and cut out the costly and not altogether reliable testing procedures) (87). The second argument based on 'harm' to the athletes is unsound because scientific or medical evidence to support this claim is inconclusive. The very fact that certain substances are illegal has prevented controlled experiments to administer prescribed and controlled doses to elite athletes to determine if they are indeed harmful (87). It is also considered to be a paternalistic argument because athletes are competent adults able to make decisions for themselves. Furthermore, the argument for proscription of performance enhancing drugs based on risk to the athlete is considered an inconsistent argument because risk itself is an inherent component of many sports practices. As Brown (16) points out, we tolerate athletes undertaking a whole range of risks in the pursuit of excellence, so on what basis should performance enhancing drugs be singled out? Brown (16) says "there seems no reason to suppose that taking risk in sports, even great risk, is inevitably irrational, self-destructive or immature... ". Indeed, risk is an inherent component of many sports such as scuba-

diving, rock climbing, skydiving and boxing, for example. Even particularly gruelling and disciplined training regimes of elite level athletes may be considered harmful since the athletes' health and well-being may be compromised if they are pushed beyond their limits.

The argument that drug-use perverts sport is fundamentally concerned with values and the ideology of sport. Sports and games are governed by peer sanctions and formal rules. To break those rules by using proscribed performance-enhancing substances means that one is no longer 'playing' *that* particular game; one cannot be judged excellent at that particular game or sport. This is a sound philosophical argument but it could be claimed that it is too idealistic since there is so much at stake in elite level competitions other than just the sporting victory alone. There is the argument that use of proscribed substances can actually secure benefits for athletes such as career and sponsorship deals if it enhances their performance and thus their chances of winning.

Although the use of prohibited substances changes the nature of the competition, some might say that there is nothing wrong with this since contemporary elite level sport is individualistic, opportunistic and when push comes to shove, it is quite simply not just sport, but big business also. And when there is more at stake than simply a sporting victory (sponsors' backing, fans' financial support, income from merchandising and club membership for instance) the pressure to win with its accompanying external rewards can prove too seductive for many athletes. In effect, it could even be claimed that the proscription of drug use neglects the interests of the athletes. With this in mind would it not be practical then to simply change the rules to allow for drug-use since this would simply be reformulating the traditional ideology into keeping with the technological era we exist in?

Schneider and Butcher (87) use the example of the 100 metres sprint. They ask how performance enhancers pervert the nature of this event since they don't change the end goal - to run 100 metres in the fastest time possible. They enhance this aim. Though, if rules were changed to make drug use legal would it mean that medical professionals, coaches and officials would have greater control over the kinds and amounts of drugs being administered? Hoberman's accounts of irresponsible behaviour of coaches and sporting bodies clandestinely administering proscribed substances, sometimes without

the athletes' knowledge, sheds much doubt on this proposal (49: pp. 234-242). Why should greater responsibility be exercised simply because previously banned substances may now be legal? The situation could even be exacerbated because if certain kinds and amounts of substance use became legal, there would always be athletes who seek to gain an unfair advantage by taking an amount of drugs greater than the permitted amount. Conversely, there will no doubt always be those athletes who make a moral choice not to use performance-enhancing substances and so may be disadvantaged.

All that this "solution" *might* do is provide subjects for experimental studies to test for the effects of using certain amounts of performance-enhancing substances over a period of time to gain more conclusive results. And then, what would be the next step *after* drug-use? As Hoberman said, genetic engineering is the next logical step (49: p. 5). The continued development of new technologies to improve performance are concerned with pushing human limits further. But to what extent can human limits be extended?

Hoberman (49) believes that the critical question of human limits consists of three issues: the ethical issue of drug use as an offence to the values of the ideology of sport; medical questions of harmful effects; and anthropological doubts about the transformation of the human organism (49: p. 104). This last issue poses the most difficult problems. For Hoberman (49), the primary question of the 'doping debate' is 'Why should pharmacological aids to athletic performance be prohibited at all?' He believes that these prohibitions contain an underlying assumption that the transformation of the human organism needs to be contained within defined limits. This assumption or instinct is based on a judgement about human identity and what should or should not be done to humankind. Hoberman's main concern is that the experimental ethos of elite level sport introduces a "fundamental instability into the definition of what a human being actually is". Such scientific procedures, he claims, are an example of scientific ambition out of control (49: p. 290):

> ...the idea that doping must be defined according to intuitively determined limits is still very much alive.... The intuitive definition of doping is important because the only alternative to a consensus built on self-restraint and a respect for human limits is endless technical and legalistic wrangling over what "doping" actually is. (49: p. 261)

Schneider and Butcher (88) have said that the argument claiming the use of doping substances is dehumanising is flawed though because there isn't a consistent view of

what it means to be human anyway as human identity is continually undergoing transformations within a technological environment. Morgan (71) finds difficulty with the 'dehumanising' argument also. He says that "the lines that mark us off as humans are constantly changing, and it is changes in the demeanor and meaning of social practices like sport that are what often prompt us to redraw these lines in new ways" (72: p. 105).

These common arguments against doping then, still fail to explain the essential core of our disdain of cheating and the subsequent bans on performance enhancing drugs. Schneider and Butcher (88) have relied upon MacIntyre's conception of internal goods in their attempt to provide new arguments for prohibiting certain performance enhancers. In claiming that doping is irrational and not in the interests of the athletes they present three general arguments.

MacIntyre says that to cheat prevents one from experiencing the internal goods and achieving the standards of excellence of the practice (65: p. 191). Using this claim Schneider and Butcher (88) argue that doping is not in the interests of the athletes since it is irrelevant to the acquisition of internal goods. This is so, they argue, because one achieves the internal goods through the exercise of skill. They say that doping may increase one's strength or endurance or sheer brute size, but it may not increase one's skill. So, whilst doping may enable one to achieve the external goods, it is irrelevant to achieving the internal goods (88: p. 72). Even the athlete who is solely interested in attaining external goods must surely have some regard for his/her chosen sport and would value its particular skills and standards of excellence. Otherwise they would find a number of other means to secure external goods. It would be pointless to participate in elite level sport purely to seek the external goods, considering the sacrifices that are required to reach top level competition. On this note, Schneider and Butcher say that victory is only significant if it is a reward for more skilled play. If one cheats then one has defeated the purpose of entering the competition since one has misused the opportunity to demonstrate and extend one's skills (88: p. 70).

Schneider and Butcher also cite Brown's concept of the "prudential athletic life" (88: p. 75). Brown considers whether athletes would be prudent not to dope since they then would avoid any unnecessary risk of harm and would be more likely to maintain a long athletic life. This is a particularly relevant point, not just from a health perspective. If an athlete gets caught, then his/her competing days are either suspended or as good as

over. And as for the external rewards, it is very doubtful that any sponsorships or endorsements would be offered to an athlete labelled a cheater even if he/she was allowed to re-enter competition at a later date. Thus the rational athlete, they say, would avoid doping as an unnecessary risk especially since "doping, at best, merely creates a competitive advantage for external goods over those who do not dope" (88: p. 73). But even this "competitive advantage" is not necessarily assured because there is the possibility that all other athletes in the competition may be doping too, and thus the competitive edge is negated. To summarise, it would appear that the athlete who pursues and respects standards of excellence in their chosen sport, who values the internal goods, and strives to demonstrate superior skill and wishes to avoid unnecessary risk or harm is wise and prudent to avoid doping.

And so it is that I refer back to Morgan's (73) ethos of games mentioned earlier. Furthermore, in discussing the incongruity of failing to abide by the rules, Morgan says that:

> ... failing to abide by either the formal or the normative elements of the internal logic of sport is, of course, that one can hardly make the good of the game the good of one's own life without accepting the peculiar limits on means the game calls for. (73: p. 227)
>
> ... at least one reason for taking up sport is to meet the gratuitous difficulties it poses.... It is therefore intrinsic to our notion of sport, to our understanding of its basic logic that it has a gratuitous quality about it and a normative stake in the forms of life that embody that quality which cannot be abrogated without destroying what it is and what it stands for.... (73: pp. 228-229)

Hoberman says that, "The possibility of unauthentic desire in the stadium accounts for the instinctive revulsion we feel toward the robotic athlete - doped or hypnotised into a trance - who haunts the future of sport" (49: p. 174). Perhaps the general disappointment of spectators with the revelations of drug-enhanced 'victories' at elite level sporting competitions stems not so much from a moral discord in that the rules have been broken, but from an unspoken sense of having witnessed alienated action. It is alienated action because it is dependent upon a drug-enhanced performance. The athlete who has relied on proscribed performance enhancers has effectively estranged him/herself from a true athletic experience. As Algozin states, this estrangement occurs also when "...we no longer know what it is supremely good to be, do and bring about in

the world... our action is alienated because we suspect that what we are doing is trivial" (1: p. 185).

The paradox of elite level sport is that science and technology are constantly working to *improve* performance yet a whole infrastructure in international competition is required to actually *control* the enhancement of performance. As mentioned earlier though, some technological applications can enhance the sport and the athletic experience in positive ways. In order to distinguish between positive and negative uses of technology, positive uses are seen to be those which enhance an athlete's ability to perform to the best of his/her ability without compromising his/her autonomy or threatening personhood. For example, an athlete may be able to improve her high-jump take-off after having seen a computer analysis of her previous performances which allows her to detect possible faults in her technique. Biomechanical analyses may also be used by athletes to see errors in diving technique, hurdle stride, or swimming stroke, for instance. Technology has also been applied to much athletic equipment to create a better sporting experience. Following are certain technological applications which are considered to have made positive contributions to sporting practices.

Positive Uses of Technology in Sport

Developments in sports science have meant that technology is able to: define particular characteristics favourable for success in a specific sport (anthropometry); tailor training regimes using specialised computer software; measure force exerted by a muscle (ergometers); analyse dietary requirements of an athlete; and diagnose surgery for specific anatomical structures (magnetic resonance imaging). With questions arising about how much further sports equipment can be advanced, sports psychology and biomechanics are areas considered to be the means which will bring about new records (55: p. 11). Certain techniques have undoubtedly made positive contributions to elite sport such as improved training regimes, injury assessment techniques and refined training techniques that reduce risk of injury. Two core areas of sports science are exercise physiology/biochemistry and human movement biomechanics.

Sports physiology is concerned with human performance from exercise testing, biochemical analysis, physiological and metabolic adaptations to training and factors affecting performance. An example of work in the area of environmental effects

involves simulating the pressure changes during an ascent of Everest and recording the resulting changes in the physiological responses to exercise. Methodological advances and biochemical techniques centre on those factors affecting performance and fatigue during laboratory-based exercise, which as closely as possible simulates the real sporting activity (91: p. 81).

Research in sports medicine has made positive contributions to elite sport particularly in sports injury diagnosis. Prevention and management techniques have been developed in areas such as soft tissue trauma and sports training, medicine and rehabilitation. The use of nuclear magnetic resonance spectroscopy (NMR) is a fairly new scientific development in sports medicine. Magnetic resonance imaging (MRI) is a more recent use of NMR that allows for non-invasive diagnostic evaluation of various anatomical structures. It is considered particularly useful and valuable in sports medicine because of its ability to evaluate injuries (52: p. 21).

In human movement biomechanics topics include: injuries, clinical assessment, rehabilitation, ergonomics and sport. Sports biomechanics itself has two main branches - the study of sport related injuries and the understanding of performance in sport. Performance related research asks questions such as 'What is the best run-up speed for a particular high-jumper'? 'How should foot placement be modified for faster approach runs'? and, "Why is it beneficial to use a curved approach in highjumping?' (105: pp. 1-2). A subdiscipline that has emerged within sports biomechanics concentrates upon investigating aspects of equipment design in relation to performance (e.g. running shoes, track design, pole vault poles, javelins, racing bicycles).

With regards to the scope and variety of biomechanics studies some research areas involve muscle elasticity, biomechanical limitations of sprinting, shoe and foot mechanics, physical and theoretical models of human movement and the quantification of EMG. Electromyography (EMG) is a measurement technique used for studying the electrical activity in muscle. The electrical signals are picked up via surface-mounted or in-dwelling electrodes. Associated muscle activity is indicated via signals that are processed in a number of ways.

Applied research in sports biomechanics seeks to gain an understanding of performance in specific sports movements as a means to then improve performance by introducing

modifications to technique or training. Sports in which dynamic strength and skill are needed such as gymnastics and athletic field events are well suited to the biomechanical analysis of technique since they are primarily biomechanical rather than physiological in nature (105: p. 50). By obtaining data on a number of athletes and identifying the characteristics of the better athletes, it may be possible to gain insight into how training should be structured. This may indicate how the individual can improve personal performance (105: p. 2).

The primary methods of data collection in sports biomechanics have been identified as force measurement and film analysis. Cine-film has been the major research medium mainly because of its versatility and accuracy. Resulting data can be used to quantify movement as input to calculation procedures for determining velocities and accelerations in both linear and angular forms. This process relies heavily upon electrical engineering techniques of signal processing before reliable data can be obtained (91: p. 102). Improvements in data-recording techniques have included the use of CMOS (Complementary Metal Oxide Semiconductor) chip technology for the logging of force and electromyographical (EMG) data during activity and improvements in radio-telemetry for similar purposes. The rapid advancement in very powerful microcomputers has made much of this possible. Computer software using computer graphics allows a coach to analyse an athlete's performance (for instance the movements of a runner or a dancer). The information gained via specialised scanners can then be used to improve form and performance by comparing the body movements which are reproduced graphically with computer models of desired form .

The assistance of modern equipment and algorithms have enabled optimization techniques to be used extensively in the estimation of muscle forces. Force transducers are used to collect force data. They include force plates, load cells, and sports equipment instrumented with strain gauges. Individual load cells have been used for measuring tensions in support cables, loads in gymnastic apparatus and force in ski boots. Strain gauges have been applied to tennis rackets, cycle cranks, canoe paddles, and even human Achilles tendons in attempts to quantify better the nature and magnitude of forces developed during sport.

Modelling, whether physical or mathematical is one of the most challenging and progressive areas of modern biomechanics research. By taking measurements of

athletes' physical dimensions and using these to define geometric solids, descriptions of the mass, moment of inertia and centre of mass locations can be obtained on a very specialised group of the population without the need to disturb or endanger the athlete in question. The theoretical model takes the form of an idealisation of the activity. Hypothetical data is generated by using the model in specified situations. For example, with a model of aerial movement, it is possible to determine how much faster a diver will somersault when moving from a straight position to a closed pike (105: p. 2). Optimisation of athletic performance is envisaged with the development of a whole body muscle based computer simulation model customised to an individual (105: p. 50).

The uses of technology in sport described above are considered to be appropriate and positive applications. Whilst many of the techniques mentioned are concerned with improving athletic performance (and by implication the chances for sporting victory), they do not threaten the athlete's personhood or autonomy. The athlete does not lose respect for self or others in the sports competition simply because they have had their technique assessed by a computer or have experienced a laboratory-based fatigue test. When used to tailor training regimes to reduce the risk of injury, or, to increase understanding of performance techniques, these technologies are developed to help the athletes. They are created out of a genuine desire to understand various elements of a sport. They do not threaten the integrity of either the sporting practice or the athlete as a person if used in ways that enhance the athletic experience without creating undue reliance upon them. Also, they do not require the athlete to break the rules of the competition.

Conclusion

This chapter has attempted to illustrate the difficulties that arise when athletes rely upon technology to increase performance whilst also being required to respect the values and formal rules of the game or competition. The new ideology of uninhibited performance adopted from our technological norms has difficulty accomodating traditional values. This is because the influences of capitalism have resulted in a mutation in the motivations and attitudes of the athletes. That is, the introduction of external rewards has created a shift in reasons and motives for participation. The professionalisation and globalisation of elite competitions has created a dependency of athletes upon science to provide the means for securing these external rewards. Using the examples of genetic

engineering, certain sports psychology practices, and drug-use in sport, the intention was to illustrate the dangers that arise if virtue and rationality are replaced by a compulsion to win and a subsequent reliance upon technology to implement this aim.

Endeavouring to recognise positive achievements of sports sciences it was intended to show that, far from sport and technology being two disparate entities, they exist in a symbiotic relationship. The purpose in identifying what may be considered inappropriate uses of technology was not to denounce technology per se. The intention was to illustrate the social importance and value of those phenomena considered to be ends-in-themselves, particularly the sacrosanctity of persons and the consequences of unreflectively applying technologies to them.

One of the central issues raised here was the problem of reconciling technological developments with a traditional ethos and ideology of sports. This question is problematic because our moral codes and ethics are not keeping up with our technological progress. The 'new' ideology of uninhibited performance has given rise to this moral and ethical dilemma. Schneider and Butcher say that what is needed is a "reaffirmation of the fundamental values of sport..." (87: p. 495). But as was discussed earlier, the traditional ideology of sport may no longer be appropriate. That is not to say however that certain values cannot be reinforced, such as the pursuit of excellence within the *rules* of the sport/game, fair play, and respect for other athletes. Heikkala says that what has happened in elite level sport is a consequence of the shift from communal interaction and local communality to the globalisation, professionalisation and commodification of an activity (43: p. 355). Heinila refers to this development as the 'totalisation process' by which high-level sport is powered by an ethos of effectiveness ultimately concerned with improved performance capacity. He believes that these same rules of effectiveness diminish more humanistic norms and traditional values of fair-play, co-operation and self-expression (44: pp. 235, 236, 248). Elite level sport in modernity reflects the motives, attitudes and values of the dominant groups in society. According to Hoberman, elite sport is a global monoculture whose values derive increasingly from the sphere of technology (48).

The assimilation of play and sport into the development of the market economy has transpired as a result of an historical shift from sport being a local communal activity to a global and commodified sports 'market' with a producer-consumer orientation. The

rationalisation of elite level sport means that our technical and productive capabilities focus upon developing optimal means for producing a specific 'end'. Consequently, winning or the 'production' of results is over-emphasised (42: p. 111). That we live under the pressures of production and consumption within an 'achieving society' means that our guiding force is the 'performance principle' and we succumb to an orientation towards success and achievement (62: p. 393).

Communality and communicative action have been replaced by increasing self-interest on the part of athletes. Thus, the traditional ideology of sport holds little weight since it prescribes co-operation in the form of choices that are both mutual and morally sound. "As traditional social bonds break down, the new forms of society are comprised of atomised, autonomous and anonymous individuals within formal associational, not communal social relations" (43: p. 357). The self-interested actions of certain athletes preclude communicative action and mutual agreement. The traditional ideology of sport becomes redundant since it does not serve the interests of athletes as decision-making *individuals*. The competition is no longer a mutual quest for excellence it is the individual quest to *win*.

The traditional ideology of sport is problematic in that it is static; it is no longer in accord with the rational demands of the system. The changes that modernity have brought about in elite sport have meant that sporting success is synonomous with economic success. The two are inextricably linked. The athlete is a marketable commodity whose worth lies in the marketplace (43: p. 359). The traditional ideology of sport based on such principles as trust, honesty, fair-play and the mutual quest for excellence was underpinned by moral, dutiful action. These normative formations based on normative consensus have been replaced with the need to objectify and rationalise these norms. As such "...communicative-normative interaction is replaced with strategic interaction oriented towards success" (43: p. 359). Ethical maxims have thus been replaced with 'principles of operation' because strategic action is neutral in the sense that it is free of the traditional binding norms such as fair-play, sportsmanship and trust.

Heikkala (43: p. 361) has made a salient point that the logic of the performance principle actually justifies athletes' use of performance enhancers, proscribed or otherwise. It is logical that if the 'end' is winning (with all the economic benefits winning entails -

commitments made with the mass media and sponsors for instance), then the decision to use performance enhancers is an individually rational choice since it is in their interest to do so. But as he explains, whilst this may be an *individually* rational decision, it results in collectively irrational outcomes (43: p. 357).

In response to the doping dilemma, Heikkala suggests that communicative, cooperative discussion and action that seeks to achieve mutually advantageous outcomes perhaps in the form of a no-doping contract may provide a solution. Heikkala asks,

> ...if the legitimation crisis is to be solved and if falling into the determinism of the logic of competing and into the hands of the markets is challenged, could the principle of discursive will-formation on the part of the actors [athletes] themselves offer an unused possibility? (43: p. 367)

The principles of fair play can only operate in a cooperative and communicative system. The current logic of competition excludes any such contractual agreement because athletes act in self-interest. Whilst cooperative and communicative action would point to the maximation of benefits for all athletes, it requires self-overcoming and the exercise of dutiful morality (self-overcoming being the Kantian end point of moral norms) (43: p. 364). Loy (63) also stresses the need to rediscover the communal aspects of involvement in sport and to maintain the concept of virtue in some form. He suggests that we seriously consider MacIntyre's moral philosophy for sport stressing the intrinsic motivations for sport involvement (63: p. 163). Schneider and Butcher likewise discuss the need for the elements of games and play to take precedence over the quest for records. The moral dilemma is how to reconcile an activity that was once associated as a simultaneous quest for excellence and virtue, with technological norms that are driven by a different rationality - the logic of uninhibited performance.

CHAPTER 5

CONCLUSION

Within this study the discussion of focal practices, and sport in particular, attempted to illustrate ways that technology threatens these pursuits. Using sport as a paradigm case, one of the main purposes of this study was to provide a rationale against inappropriate uses of technology. The intention was to forward new arguments for the prohibitions against certain performance-enhancing substances, particularly in light of the fact that other justifications have been refuted by a number of authors. It was hoped and intended that this rationale, based on the respect for ends-in-themselves and respect-for-persons proposal would be relevant and applicable to other phenomena that we value for their own sake and that provide human fulfilment and enjoyment. In doing this, the intention was to raise the concerns that we may lose sight of those phenomena that engage us in their own right if we become increasingly dependent upon technological applications. A proposal forwarded within this study is that we 'disengage' ourselves from the technological bind in order to open up our possibilities and free ourselves to exercise choices that do not have to be provided by technological means. This is to endorse Schneider and Butcher's promotion of:

> ...the joy of sport, joy that comes from motivation and grounding in a love of the activity itself, joy that flows for its own sake, joy that exults in human movement and exalts the human soul. (88: p. 78)

The ongoing debates concerning the use of performance enhancing drugs in sport prompted this study of the relationship between sport and technology and the ethical issues that have arisen as a consequence of this relationship. Chapter two dealt specifically with technological culture in order to provide the larger setting in which the sport-technology relationship exists. Looking at the rise of technologically historically, the ways that technology and science have influenced our lives were made more apparent. Changes to our values system were of particular importance since an understanding of these changes and how they came about enbles us to see the influences technological applications have had upon important elements of our culture such as sport. An explanation of the hegemony of an instrumentalist scientific rationality highlighted certain shifts in values systems over the centuries such as the contemporary malaise of people seeking fulfilment in the consumption of commodites. The question

of whether we are experiencing a technological optimism or technological determinism was addressed in light of some negative consequences of so-called technological progress. It was argued that a technological reality has replaced or reduced humanistic values such as freedom, autonomy and choice with an instrumentalist rationality which gives primacy to objective laws. To illustrate this argument certain negative consequences of technological applications were discussed. The attempts to remedy ill effects by means of 'technological fixes' further highlighted our unwitting dependence upon technologies.

Chapter three provided the ethical construct, based on the moral philosophies of Aristotle and Kant, from which the appropriateness of certain technologies could be assessed. One of the main intentions of this chapter was to provide a conceptualisation of ends-in themselves. It was argued that the exercise of our rationality is essentail to be able to respect ends-in-themselves and that to disrespect a person by treating them as a mere means to an end is to act irrationally. This understanding of personhood enabled us to assess certain technologies. It was argued that they could be considered inappropriate and used in irrational ways if they did not incorporate respect for ends-in-themselves or persons. It was argued that the excellent exercise of our rationality contributed to a greater community good and to a well-lived life since it involved respect for both other persons and for those things and activities that provide for self-actualisation and fulfilment.

Chapter two then provided the technological setting in which the sport-technology relationship exists. Chapter three established certain normative criteria for assessing moral issues pertaining to the uses of technology. Chapter four dealt with the relationship between sport and technology. As a major part of the culture of contemporary industrialised societies, sport provided a clear case for the argument for controlling technological developments. Sport was a particularly salient example to use for raising moral issues concerning technological applications since technology and science play an ever-increasing role here. The potential for technological applications to have negative influences and sometimes harmful consequences was assessed using the normative criteria based on the moral philosophies of Kant and Aristotle as discussed in chapter three. Arguments for re-assessing the role of technology in sport were based on the humanistic proposal that certain applications of technology and science are irrational

since they do not respect the fundamental values of sport (when it is considered as a focal practice and a social practice) and in certain cases treat athletes as mere means to ends. An explanation of internal and external goods aided arguments which were forwarded to justify the bans on athletes using performance enhancing drugs. These arguments were ultimately based on the respect-for-persons (athletes) and respect for ends-in-themselves (focal practices such as sport) proposals.

Although taking a humanist stance this thesis does not propose a Luddite alternative to technological progress. It would be naive to present choices as either pro-technology or anti-technology. Yet a trial-and-error approach to developing our technologies has often proved to be irrational and irresponsible at the lowest level and downright dangerous at the highest level. It has been implied within this study that the more serious problems of a technological society are not to do so much with pollution, unemployment or rising social ills such as divorce and suicide, for instance. The problems are much more deep-seated and difficult to explicate since they are concerned with our fundamental values and our basic need for human fulfilment.

This thesis suggests that we need to re-examine the epistemic status we have bestowed upon the scientists and technologists since we have in effect granted them the power to provide our horizons of choice and action (103: p. 315). What is required is the development and refinement of new assessment techniques or policies that take into consideration not just *what* we can do, but *why* we should do it, and what the consequences for the long-term future might be. This approach may at least minimize unanticipated mistakes and disasters. Often, our choices to implement certain technologies do not indicate wise or reflective decision-making. Wise decision making would require improvement upon the quality and type of assessment processes we currently accept (82: p. 55). Whilst the biomedical scientists may be able to quantify the benefits of scientific research, it is a fact that scientific progress frequently occurs in many different and unconnected directions. Subsequent applications and consequences cannot always be predicted (23: p. 81).

Whilst we should still respect traditional categorical imperatives from which the respect-for-persons proposal derives, we need to adopt and adapt values that are both humanistic, contemporary and critical. We would likewise have to denounce claims of

ethical neutrality with regards to the uses of certain technologies (4: p. 21). It is significant that Iraj Zandi, (himself an engineer) wisely advises that it is not so much the threat of total destruction that is of concern, but perhaps our unrecognized fear of total meaninglessness (106: p. 371).

Hans Jonas raises an important point in his exposition of the need for new future-oriented moral imperatives (9: p. 338). Kant proposed that we "act so that you treat humanity, whether in your own person or in that of another always as an end and never as a means only" (78: p. 67). This categorical imperative is present-oriented because it states how we should regard and treat each other *now* , as we exist currently. At the time that Kant defined his categorical imperatives though, science and new technical inventions were not deemed harmful for the environment or future generations; the need for future-oriented ethical imperatives was not an issue. However, today the obligation of technologically developed countries is to develop ethical imperatives that are future-oriented. If we still believed in the promise of a technological utopia, moral ontological concerns probably would not be an issue.

By questioning and critiqueing technology we are in effect judging the worth of human life. We are evaluating what actually constitutes happiness and well-being. The question this thesis atempted to answer is whether progressive technologies are compatible with a greater human good. The humanists, easily accused of holding conservative fears and an Orwellian-like attitude, question the ability of a technological reality to provide for a meaningful existence. It has been argued that a technical rationality by its very nature is not concerned with the way humankind *is* or exists but with the way it performs or operates. This claim was illustrated with regards to the increasing technological intervention in high-level sport with the aim of continually improving athletic performance. In replacing moral imperatives with scientific technical imperatives our humanistic morality is superceded by a technological morality. As such, we have, in effect created a technocracy (84: p. 14).

Frank Fisher, in his article 'Society, not science should be the arbiter', has voiced his concerns over the rate of technological invention and intervention, particularly genetic engineering and micro-processing (35: p. 20). He stresses the need to recognise the social constructions within which decisions about implementing new technologies are made and advises that more caution be employed since we tend to pre-validate new

technologies only assessing their 'success' once they have become firmly entrenched in the social infrastructure. With reference to genetic engineering and micro-processing he says that we can "already tell that once in place, they will be virtually impossible to undo" (35: p. 20). He believes that the implications of these technologies for reconstructing society are even less obvious than with nuclear power. He questions our definition of technology and asks "Should the definition of our technology be limited to the hard surface of the device? Will it be the device plus manufacturing infrastructures? Or all this plus the regulations, standards, marketing and so on that bring it into reality? Are you, the user, part of it?" (35: p. 20). Technology, he states, is more than material benefits and costs. His recommendation is that we need to slow the rate of technological innovation to permit constructively critical democratic processes to catch up and repossess our technical sophistication.

Potential benefits of both current and future technologies must be assessed in relation to the protection of that which makes us ends-in-ourselves, that is, persons. Yet, a complete reform of technology would require that it no longer be regarded as the dominant way we define our existence in reality. Our future may very well depend upon the development of a new social ethic that permits the construction of a new social order that perhaps associates wealth with those 'goods' mentioned earlier that can be had in the realms of play and focal practices i.e., a rational realignment of work to play at the basic level (71: p. 428). This is ultimately to ask the question yet again, 'In what ways does technology enhance or obstruct our freedom?'.

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