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**THE PHILOSOPHICAL AND ETHICAL DIMENSIONS OF ARTIFICIAL
INTELLIGENCE IN THE OLYMPIC MOVEMENT.**

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Summary

Olympism, inspired by Baron Pierre de Coubertin, promotes holistic development, fairness, respect, friendship, excellence, and international understanding through sport in its aims to make the world a better place. With the increased use of Artificial Intelligence (AI) in the Olympic Movement, we ought to ask ourselves: Could AI become a threat to these foundational values and the goal of the Olympic Movement to make the world a better place?

Our study investigates the application of AI in the Olympic Movement, exploring the philosophical and ethical dimensions of integrating AI into the Olympic Movement and examining how it aligns with the values of Olympism or challenges them.

Through a deep review of existing literature, we can understand how AI could enhance fairness and inclusivity in sports by reducing human errors, optimizing performance, and giving equal access to AI tools to all athletes regardless of background, ethnicity, or financial status. This can empower athletes, coaches, and referees to contribute to a more equitable competition. However, this potential also goes hand in hand with ethical issues such as algorithm bias, privacy risks, a loss of human agency, and fair play. The advancement of technology, through the “**study and knowledge of the practical, especially industrial use of scientific discoveries**” (Cambridge University Press, n.d.), can sometime conflict with the fundamental humanistic values of Olympism. This conflict could be resolved by finding a balanced approach that integrates ethical responsibility with innovation.

Our key findings explain this balanced approach. Our research shows that there is a need for a transparent governance framework that prioritizes ethical considerations. Developing an ethics charter governing the use of AI could ensure equitable access to AI technologies and provide a guiding light for stakeholders.

By aligning AI practices with the principles of Olympism and the Olympic Movement, we could leverage AI to our advantage to promote fairness, inclusivity, excellence, and respect, and consequently make the world a better place.

Abstract

This thesis explores the ethical and philosophical implications of Artificial Intelligence (AI) within the Olympic Movement. It focuses on the compatibility of the utilization of AI with Olympism's principles of respect, friendship and excellence. This thesis analyzes how AI could be integrated into the Olympic Movement through a qualitative desk-based research methodology. The research highlights the capacity of AI to help improve decision-making, reduce human error, foster equitable competition by leveraging data-driven insights, and allow for a more precise management of events and governance.

Despite the potential benefits, the study identifies ethical challenges associated with the use of AI, including algorithmic bias, privacy concerns, and the diminishing role of human agency in sports. The research underscores the importance of transparency, accountability, and fairness in AI applications, emphasizing the need for robust ethical oversight to prevent the unregulated use of AI from undermining the values central to the Olympic Movement. Philosophical considerations focus on maintaining a balance between technological innovation and preserving the humanistic values in sports.

To address these challenges, the thesis highlights the need for a framework to govern the use of AI within the Olympic context while taking into account ethical considerations. It recommends the establishment of an AI Ethics Charter, including, among others, equitable access to AI technologies and ethical education for athletes, coaches, and officials. By fostering ethical AI practices aligned with the principles of Olympism, the Olympic Movement can embrace technological advancements while preserving its core values. The study concludes that ethical AI governance is essential to ensuring that the use of AI serves as a force for good, enhancing inclusivity and fairness while maintaining the integrity and spirit of the Olympic Games.

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Chapter VIII: End Matter

Chapter I: Introduction

The Olympic Movement is a historical phenomenon that reaches a global scale encompassing not simply the pursuit of athletic excellence but also the profound educational, cultural, and social values that resonate with societies all over the world. This multifaceted philosophical vision is commonly referred to as Olympism.

The revitalization of this movement can be traced back to Baron Pierre de Coubertin, who spearheaded the initiative during the inaugural Olympic Congress in 1894. This revival was inspired by the ancient Panhellenic Games dating from around 776 BCE (more specifically, the Ancient Olympic Games that used to take place in Ancient Olympia), which were deeply intertwined with Greek Mythology, religious practices, and traditions that aimed to celebrate athleticism and physical achievements, skills that were perceived as a mark of honor to the gods. It was also inspired by Dr. William Penny Brookes' modern and local twist to the ancient Games in Much Wenlock in the United Kingdom (Mandell, 1976.) as well as the Zappas Games which were a series of athletic competitions held between 1859 and 1875 (Young, 1996). Both precursors of the modern Olympic Games led to igniting a movement rooted in the ideals of global peace, personal development through the concept of excellence (“ἀρετή”), as well as internationalism.

Nowadays, the International Olympic Committee (IOC) is the supreme authority governing the Olympic Movement at an international level. The IOC’s vision is to build a better world through the unifying power of sport and promote harmony among nations through three core values of Olympism, “excellence, respect, and friendship.” Also, through additional principles such as “fair play,” “sportsmanship,” “solidarity,” and “sustainability” (IOC, 2023). These values and principles comprise the foundation to build activities that promote sports, culture, and education seeking the development of a better world.

However, Olympism is undergoing a modernization process. This transformative phase introduces new challenges and opportunities brought by technological innovations and progress. The advent of AI redefines various aspects of life and sports and the increasing use of AI in the context of sports raises ethical questions, revolving around machines and technological progress that pose a fundamental challenge to moral thinking, inherently questioning the traditional philosophical

conceptualization of technology as a tool or instrument to be used by human agents (Gunkel, 2012).

I.1 Background and Rationale

Artificial intelligence (AI) has emerged as a transformative innovation in recent years reshaping industries, social interactions and even systems of governance. It, refers to “the tangible real-world capability of non-human machines or artificial entities to perform, task solve, communicate, interact, and potentially form relationships with other entities.” (Sundar, 2023). This means that we understand AI as the development of computer systems that can perform tasks that usually require human intelligence, such as visual perception, speech recognition, and decision-making. It encompasses a range of technologies including machine learning, natural language processing, data analysis and robotics.

Nowadays, the purpose of AI is based on deep learning and neural networks in order to enable computer systems to complete tasks that would normally require human input while improving the efficiency and productivity of current operations. Technology has the potential to significantly impact society and people’s lives in many ways. However, the value of AI depends on how people use it.

This use entails potentially serious ethical implications within the Olympic Movement as it is necessary to consider how we can guarantee that the application of AI in sports corresponds to the highly valued interests in promoting human values, social cohesion, fair play and overall making the world a better place.

I.2. Research Problem and Questions

The modern Olympic Movement is deeply rooted in values such as excellence, friendship, and respect. The values of excellence, and respect have been established since ancient Greece and continue to inspire athletes and nations around the world. The Olympic Movement aims not only to promote athletic prowess and achievement but also to foster peace, mutual understanding, and personal growth through physical activity.

These goals reflect the way of Olympism emphasizes ethical competition, cultural exchange, and the development of moral character. The Olympic Games serve as a platform for this philosophy to encourage individuals to strive for greatness, to constantly evolve in the pursuit of holistic development but also to do so by adhering to principles of respect and fair competition.

However, with the rapid development of Artificial Intelligence (AI), which brings new capabilities and reshapes sectors as diverse as healthcare, education, and sports we find ourselves at a crossroads. The introduction of Artificial intelligence in the Olympic Movement, and, on a greater scale sport, compels us to critically examine and understand that solely seeking to increase efficiency, performance enhancement, and predictive accuracy are not necessarily aligned with the humanistic values central to Olympism.

The challenge, therefore, is to assess whether AI can be integrated into the Olympic Movement in a way that respects and reinforces its values.

It is true that AI-driven advancements like predictive analytics, performance tracking, and autonomous officiating could benefit athletes, coaches, and administrators. Yet, ethical concerns regarding fairness, privacy, and the potential loss of human agency and sportsmanship, which are crucial pillars of Olympism, remain.

The purpose of this study seeks to address the following problem: **Could AI become a threat to the foundational values and goals of the Olympic Movement in its effort to make the world a better place?**

To explore this problem, the following research questions are posed:

1. What are the foundational values and goals of the Olympic Movement, and how do they shape the practices and philosophies of the Olympic Games?
2. What are the potential applications of AI in the Olympic Movement and the Olympic Games?
3. What philosophical and ethical considerations arise from these applications?
4. How can governance within the Olympic Movement ensure ethical, transparent, and human-centered practices of AI?

5. To what extent do the values and goals of AI align or conflict with those of the Olympic Movement?
6. Could AI compromise the efforts of the Olympic Movement in making the world a better place?

I.3. Objectives of the Study

This study aims to conduct a values-based analysis of AI's potential role in the Olympic Movement. The specific objectives are:

1. To examine the foundational values and goals of the Olympic Movement as established in existing literature.
2. To explore the potential applications of Artificial Intelligence (AI) in the Olympic Movement.
3. To analyze the philosophical and ethical considerations arising from the applications of AI.
4. To assess governance mechanisms related to AI in sports.
5. To evaluate areas of alignment or conflict between the values of Olympism and those of AI development.
6. To evaluate the extent in which AI might support or undermine the Olympic Movement's mission to make the world a better place.

Through these objectives, the study will contribute to a nuanced understanding of how AI might be ethically and meaningfully integrated within the Olympic context.

I.4. Significance of Study

Overall, this study aims to uncover the main ethical and philosophical challenges associated with the use of artificial intelligence technologies in the Olympic Movement. This inquiry is essential for several reasons. Firstly, as AI continues to evolve and integrate various aspects of everyday life, understanding its values and goals within the ethical framework of the Olympic Movement offers critical insights into both technology and sports ethics. Although there is growing research on AI's impact across various sectors from authors such as Carrio Sampedro and his work on the Ethics of AI in Sports,, AI's influence on the values that drive the Olympic Movement remains underexplored and warrants deeper research.

By focusing on the ethical integration of AI technologies, this study contributes a unique and valuable perspective on how such advancements can complement and enhance, rather than undermine a value-based institution such as the Olympics. The Olympic Charter stipulates the

fundamental principles of ethics regarding sports and the Olympic Games, firmly rejecting any form of discrimination and violence, while also considering sport as a human right and a unique force. Artificial intelligence could threaten these goals, as many ethical concerns can arise from this technological intervention. The introduction of AI into this context can raise important ethical questions on issues such as fairness, transparency, and accessibility. Moreover, different AI algorithms are used in various sports activities, from supporting the athlete in his preparation and injury prevention to managing the totality of the events. These algorithms may differ in quality and the data they need to operate, which may lead to discrepancies and inconsistencies in their making. Therefore, it is necessary to consider certain ethical principles to harmonize this process.

The Olympic Movement is the most important sports movement in the world, so it sets an example for other sports and institutions. In fact, the Olympic Movement has an important impact on society. Since it is assumed to serve society, to bring joy and pleasure associated with physical activity and sport, the importance of ethical AI in the Olympic Movement is even greater. Therefore, it is important to examine the ethical aspects of the use of AI not only for the Olympic Movement but, on a large scale, for sport and society itself.

Finally, the outcomes of this research may guide the International Olympic Committee (IOC) and other stakeholders in creating policies and guidelines that help ensure AI's role within the Olympic Movement is ethical, respectful, and aligned with Olympism. This study thus seeks to provide actionable recommendations that safeguard the values of the Olympic Games while embracing innovative technological advancements.

Chapter II: Methodology

II. 1. Research Design

We employ qualitative desk-study as our research methodology through a critical literature review. This research focuses on the systematic collection and critical analysis of secondary sources on AI and ethics, on Olympism and the Olympic Movement, and on the Olympic Values. Our desk study involves synthesizing information from preexisting data to explore specific philosophical and ethical dimensions. Due to the abstract and conceptual nature of the subject matter, this approach is particularly suited to investigating the intersection of Olympism and artificial intelligence (AI).

The design incorporates elements of critical analysis, through three frameworks (constructivist, humanistic, critical) aimed at deconstructing and interrogating the alignment and tensions between AI's values and the ethical principles underlying Olympism. By engaging in theoretical perspectives, historical contexts, and case examples, the research ensures a comprehensive evaluation of the interplay between AI and Olympic values. It is important to note that with this design we won't be measuring but interpreting meanings and principles from established secondary sources before.

II.2. Data Collection and Sources

For data collection, the study draws extensively from authoritative secondary sources across three main domains: AI ethics, Olympism, and their intersection within the sports context. Key sources include:

2.1. Olympism and the Olympic Movement

Examples of texts included in this part are texts on Olympism by Pierre de Coubertin, the Olympic Charter written by the IOC in 2017 as well as scholarly critiques and discussions, such as McNamee & Parry's *Olympic Ethics and Philosophy*.

2.2 Application of AI and Governance

For this analysis, our main sources are emerging studies on the role of AI in sports governance, privacy, and athletes' rights, such as Carrio Sampedro's (2023) work on AI's alignment with Olympic values, as well as research on AI's potential to disrupt or enhance fairness and equity in sports from Kazim (2020).

2.3 Critical Overview of AI in the Olympic Movement

Critical perspectives on the Olympic Movement and AI, including fairness in machine learning, the societal impact of these emerging technologies, and the ethical crossroads of AI in sports Governance through authors such as Sutherland 2017, Wiggins and Moller 2020, and Johnson and Taylor 2021.

The comprehensive bibliography includes books, journal articles, and institutional reports to ensure diverse perspectives to reflect a balance between conceptual discussions and real-world applications of AI in sport.

II. 3. Analytical Framework

This study follows a systematic approach to inquiry called the “**Scientific Method**”.

In this method, we first identify a problem or phenomenon, then gather existing information that already exists in the literature, before formulating a hypothesis that will be assessed through thought experiments that will lead us to a conclusion.

II. 4. Limitations of the Study

This desk study faces several limitations:

1. Dependence on Secondary Sources:

As the research does not involve primary data collection, it relies exclusively on pre-existing literature, which may limit the scope of perspectives or result in gaps in empirical evidence.

2. Theoretical Focus:

The study's conceptual nature may restrict its applicability to practical settings. While the research addresses ethical guidelines and policy implications, direct implementation strategies may require further empirical validation.

3. Evolving Nature of AI:

The rapidly changing field of AI technology means that some insights may become outdated as new advancements and ethical challenges emerge.

4. Lack of empirical evidence:

While this thesis is based on philosophical and ethical perspectives, it may lack the empirical validation that may be required in a longitudinal study.

Chapter III: Literature Review

Part I: Olympism and the Foundations of the Olympic Movement

The following section explores the ethical and educational foundations of Olympism by delving into its core values and ethical principles, through Friendship, Excellence and Respect, examining the roles of fair play, equality, and inclusion. This section provides a philosophical and ethical backdrop for a later understanding of the integration of Artificial Intelligence (AI) in the Olympic Movement.

III.1.1 Ethical and Educational Foundations of Olympism

The concept of Olympism, as envisioned by Pierre de Coubertin, is grounded in the philosophical synthesis of sport, culture, and education. It is a philosophy of life that blends sport with culture and education to create a way of life based on the joy of effort (IOC 2007 - 2023). Its goal is to show how sport can make us all better citizens through the combination of mind, body, and spirit but also to help foster better relationships between communities and nations, helping us live in harmony. Coubertin's interpretation of sport as "religio athletae" framed sport as an almost religious practice that celebrates the moral and physical development of individuals. He believed in the power of sport to foster international peace and democratic ideals through the Olympic Games. It is not merely a celebration of athletic excellence but a holistic philosophy aimed at the development of human character and the promotion of international harmony. Rooted in principles of balance between body, mind, and character, Olympism seeks to foster a culture of peace, understanding, and mutual respect through sport (IOC, 2017). Pierre de Coubertin also viewed sport as a pedagogical tool capable of instilling ethical virtues such as discipline, respect, and fairness. In 2014, McNamee and Parry emphasized that the educational dimension of Olympism lies in its potential to cultivate moral character and promote civic virtues through competitive sports. This ethical underpinning reflects a commitment to the broader development of individuals and communities, integrating humanistic values with athletic pursuits.

The Olympic Charter codifies these ideals, presenting sport as a universal language that transcends cultural and political boundaries (IOC, 2017). In 2016, Adams further argued that Olympism provides a framework for sports to function as agents of social and moral development, with

education as a central pillar in this endeavor. By fostering critical engagement with these values, Olympism positions itself as a moral compass for the Olympic Movement.

Going further than a universal language, the IOC wants sport to be a universal human right, and that all should be free to practice it. Pierre de Coubertin believed that Olympism is not a system, but a state of mind. It can permeate a wide variety of modes of expression, and “no single race or era can claim to have the monopoly of it” (World Olympian Association, 2023). These values emphasize discipline, respect for rules, and sportsmanship, which Coubertin considered essential for moral education.

Born from these beliefs and thoughts is a blend of the competitive spirit of modern sport with the cultural heritage of the ancient Olympics, which laid the groundwork for the Olympic Movement. These principles can be found in the Olympic Charter and mentioned as the “balanced development of body, will, and mind” while fostering universal values such as tolerance and respect. Finally, Coubertin’s advocacy for enlightened nationalism sought to reconcile national pride with global unity, encouraging athletes to share their cultural traits in a peaceful and comparative manner, with a vision to build a better world through sport served through the values of excellence, respect, friendship, and principles such as fair play, sportsmanship, solidarity, and sustainability (Olympic Charter, 2020).

III.1.2 Core Values and Ethical Principles

At the heart of Olympism are its core values of excellence, respect, and friendship (International Olympic Committee, 2017). These principles underscore the ethical foundation of the Olympic Movement, emphasizing both individual achievement and collective harmony. Excellence, as interpreted within the Olympic context, extends beyond athletic performance to encompass personal growth and community betterment.

III.1.2.1 Friendship

At the core of the Olympic Movement lie the values and principles that provide guiding frameworks for athletes and other participants to make sense of their environment. It is, rooted in the spirit of mutual understanding, and aims to build bridges between cultures, promoting international dialogue and cooperation through sport (Spaaij & Burleson, 2016).

The value of friendship, articulated in the Olympic Charter, serves as a foundational pillar. In ancient Greek, the term “φιλία” was used for friendship, conveying sociality, solidarity, and community, the quality of being part of a wider group. It asserts the interdependence and common interest of people bound in friendship. This notion of friendship fosters “a warm spirit in which the youth of the world can structure society according to the ideals of respect for culture and universal human dignity” (Olympic Charter, 2021). Within this context, friendship represents both the opportunity for personal growth and the ability to connect meaningfully with others, as highlighted by scholars such as Jowett and M. Meek in 2017, who asserted that interpersonal relationships in sports can enhance athletes’ experiences.

In a landscape defined by competition, the Olympic vision of friendship prevails. The Olympic anthem famously notes, “Bringing the world together in a peaceful competition,” highlighting the paradox of forming friendships amidst rivalry. In moments of close competition, how do we process the experience of narrowly missing victory? The principle of fair play becomes integral in navigating such encounters.

Fair play is a cornerstone of Olympism, symbolizing the pursuit of victory through honest and ethical means while maintaining integrity, honesty, and sportsmanship. It embodies the spirit of

respect for opponents, adherence to rules, and commitment to equity (Corral et al., 2010). De Coubertin himself viewed fair play as a moral imperative, integral to the character-building potential of sport.

Equality and inclusion are similarly foundational to the Olympic ethos. In 2016 Darnell examined how the Olympic Movement has sought to promote gender equality and inclusivity, particularly through initiatives aimed at increasing women's participation in sports. However, persistent disparities in representation and access highlight the ongoing challenges in fully realizing these ideals.

The ethical commitment to inclusion extends beyond gender to encompass broader dimensions of diversity. Spaaij and Burleson in 2016 argue that the Olympic Movement's ability to unite individuals across cultural and political divides underscores its role as a catalyst for social integration. These principles of fair play, equality, and inclusion collectively advance the moral vision of a more equitable and harmonious global society.

III.1.2.2 Respect

The principle of fair play is very intricately linked with the philosophy of respect, which is also a core tenet of Olympism.

Respect entails acknowledging the intrinsic worth of individuals or groups, regardless of their ethnicity, social background, language, or other distinguishing factors (Coakley, 2017). The cultivation of mutual respect is essential to the shared experience of sports competition, a foundation upon which the Olympic ideal is constructed (Olympic Charter, 2021). This concept is fundamentally rooted in the harmonious integration of physical and mental disciplines, often instilled through the rigorous educational pathways that athletes navigate (Donnelly, 2008). This means that respect through sport should be the embodiment of the inherent dignity of all individuals.

From both general and specific perspectives, respect plays a pivotal role in daily life. Political theorists and philosophers alike underscore respect as a fundamental force that binds society together (Taylor, 1992). In contemporary contexts, respect stands out as a vital value embraced

across global cultures, establishing a universal principle that transcends geographical and cultural boundaries (Hofstede, 2001). Advocacy for increased respect remains a cornerstone of the mission of Olympians, aligning with their objectives to promote understanding and appreciation among diverse groups (Olympism, 2021).

Exhibiting respect toward fellow athletes, mentors, organizers, coaches, and the governing bodies within the sports domain is imperative. Such demonstrations of respect serve to honor individuals, social constructs, traditions, and the legal frameworks that underpin peaceful coexistence and collaborative growth within human communities (Nussbaum, 2011). This commitment to respect is not merely a cultural norm but a prerequisite for fostering a society grounded in equity and justice (Rawls, 2001).

However, to cultivate this respect towards others, respect for the rules is crucial.

Respect for the rules is not only related to the events but also to the organization and functioning of the Movement itself. All stakeholders, for example, the NOCs, IFs, and athletes, are responsible for making sure that the rules in matters under the jurisdiction of the IOC, including compliance with the Olympic Charter, are always respected and safeguarded. Respect for the rules also involves respecting the act of making and implementing the rules. This is not just a matter of blindly obeying the rules. Discussing and finding the best possible solutions is a legitimate process, particularly within the Olympic Movement governance, and all stakeholders have a role to play in this matter.

However, the refusal of compromise, or in other words disregarding the rules by opting for a behavior that is against them, creates a risk of abolition of the system with its respect for consistency and the supremacy of the highest-ranked authority.

The IOC's Code of Ethics explains that a violation of the rules and regulations (for example the Olympic Charter, the World Anti-Doping Code, or the Olympic Movement Code on Prevention of Manipulation of Competitions) will lead to a disciplinary commission in which sanctions could be given out. Actions that are defined as being against the principles of fair play or moral principles could be considered an offense and be sanctioned accordingly.

This concept is not new. Athletes violating the rules in ancient times were severely punished with fines imposed by judges. These fines were then used to fund the erection of bronze Zane's monuments (in honor of Zeus) to shame the athletes, their fathers, and their city. Zanes cited that an Olympic victory is to be won not by money but by swiftness of foot and strength of body. They warned all Greeks not to engage in unethical behavior such as bribery or cheating their way to victory, and to respect the rules and everyone involved.

III.1.2.3 Excellence

Finally, to fully understand the potential use of Artificial Intelligence in the Olympic Movement, it is also crucial to understand the concept of *excellence*, which is also one of the foundational values of Olympism. Excellence is closely tied to performance and competition, while friendship and respect are explored through broader ethical and social considerations. Therefore, excellence demands a more rigorous investigation, historical research, and understanding as it is complex and multifaceted. By examining the pursuit of excellence, particularly through the lens of the impact of artificial enhancement and doping on excellence, we can better appreciate AI's potential to foster fairness, integrity, and true athletic achievement in modern sports. Excellence encapsulates the aspiration to achieve one's highest potential while adhering to principles of fairness and integrity, which is a crucial part of how AI should be used in the Olympic Movement.

The modern Olympic Games are meant to be a display of global sportsmanship and excellence. They are meant to be proof of the Greek tradition's ongoing legacy and the everlasting quest for human greatness.

Central to Olympism is the concept of "Excellence." It stems its roots in the ancient Greek word "ἀρετή" (arete), but with a contemporary English translation that only skims the surface of the true meaning the ancient Greeks intended. The Greek words "aristos" and "arete," often translated as "excellence," "virtue," or "valor," were central to Greek philosophy and culture. This concept was not limited to physical prowess but encompassed moral virtue, skill, and fulfilling one's purpose or function. In ancient Greece, pursuing excellence was integral to personal and societal development. In athletics, it was vividly embodied in the ancient Olympic Games, which began in 776 BCE in Ancient Olympia.

In ancient times, “ἀρετή” was a central value of the Hellenic societies. In a broad sense, it refers to being your best while aiming to reach your highest potential. It was a concept that transcended the physical skills one could achieve while finding itself in moral concepts, civic responsibility, and culture, as well as the perfection of diverse skills and talents. If someone achieved excellence in all those areas, they would have had a holistic development and would be a well-rounded, virtuous person.

Excellence in the Ancient Games was about being the best and outperforming others. It was about being an athlete that reincarnated the concepts of “arete” (ἀρετή) or virtue, excellence, and moral superiority because victory in those games had profound and direct implications for anyone who could train and be excellent enough to be first. Christoph Bertling and Stephan Wassong tell us in *Striving for Athletic Excellence*, that in Homer’s epics, the Iliad and Odyssey, the nature of Greek culture followed the ideal of being first and outperforming all others. Society then expected an athlete to try to be the best. An athlete’s excellence is the fruit of physical abilities, polished skills, determination, and passion (Miller, 2004).

Yet, excellence was not only about being first in the Ancient Games. For Aristotle, the idea of arete or excellence is crucial to his concept of “eudaimonia,” often translated as “happiness” or “flourishing.” This concept was later redefined to match its meaning in ancient Greece. It is said that experiences of eudaimonia are a feeling that emerges when you strive for the development of your best self and use it to pursue your purpose in life (Waterman, et al., 2010). Also, directly translated from ancient Greek: “Ἡ ἀρετή εἶναι ἀπαραίτητος ὅρος τῆς εὐτυχίας” (Virtue is a necessary condition of happiness) Aristotle said in *The Nicomachean ethics* that a happy life or a life of rational activity exists only according to virtue that is now translated as excellence. He believed that moral virtue and excellence of character are the best states of character a person can possess. These values of moral virtue and excellence of character, as well as the balance between body, will, mind, peace, truth, and celebration, laid the foundation for the modern Olympic Values. They are the starting point for an excellent athlete who pursues records and the first place while being virtuous, fair, and respectful of others through his search for excellence.

Through time, the concept of excellence has evolved, becoming a global ethical compass guiding athletes, businesses, and society to the moral and ethical virtues previously mentioned. This is why

the IOC believes excellence is a way to encourage people to be the best they can be. This core value embodies the pursuit of personal and collective challenges to surpass the human limits and strive for a commitment to improve all aspects of one's life beyond sports.

This vision of the IOC aligns with the original view of excellence and arete, as it was conceived in Ancient Greece since modern Olympic values promote holistic development, a well-rounded and virtuous person that balances body, will, mind, peace, truth, and celebration.

The spirit and essence of "excellence" are captured in Pierre de Coubertin's phrase during his speech at the 1908 London Olympic Games, "The important thing in life is not the triumph, but the fight; the essential thing is not to have won, but to have fought well.." McIntosh argued that this is misquoted, and that Coubertin meant "the most important thing is less to win than to take part" (Bruce Kidd, 2013), meaning winning is still important but still emphasizing participation over victory. Valuing the journey and collective endeavor over the sole pursuit of triumph is a fundamental contrast to the philosophy that prioritizes victory, which can lead to unethical and unsustainable practices.

However, the practical implementation is not always aligned with the vision and is often derailed. Proponents of the idea that excellence is only achieved through victory at all costs exist, and in some cases, its holistic, long-term focus is sacrificed for short-term gains.

In 2002, a case of state-sponsored use of anabolic steroids was leaked by secret documents in the former Soviet Union (Kalinski, 2002). A year later, in 2003, research shed light on blood doping in elite Soviet sports (Kalinski, 2003). This was confirmed through a detailed investigation in 2016 by WADA, the World Anti-Doping Agency, which released two reports accusing Russia of a state-sponsored doping program that lasted four years across many of the summer and winter Olympic Sports. In response to these findings, the IOC stated that "there was a fundamental attack on the integrity of the Olympic Games and on sport in general."

Another example is the national sports policies in eastern Germany from the mid-sixties to the late eighties, which encouraged doping. The athletes of eastern Germany were found to have enhanced

their performance using androgenic anabolic steroids as the GDR (East Germany) cheated its way to success and damaged the health of many (Dimeo, et al., 2011).

China is also often blamed for pushing its athletes to their absolute physical and psychological limits, even starting from a noticeably young age, to increase the chances of winning medals.

While not the only ones, these notable examples are demonstrations of the dilution of the original vision. Yet, this phenomenon is a development that has been around for a long time. The earliest records of “winning at all costs” behaviors, using enhancements and cheating in sports, can be traced back to the Ancient Games. Athletes would eat figs and take extracts from plants, animals, or even humans before the events occur to improve their performance (Holt et al., 2009). In some cases, athletes would bribe opponents to lose on purpose to win and bring honor to their polis.

These examples explain why doping in sports presents a significant ethical challenge, threatening the integrity of competition and undermining the Olympic values of excellence, fairness, and respect. As technology evolves, Artificial Intelligence emerges as a potential ally in the fight against unethical practices, offering innovative tools for detection and prevention. However, it also emerges as a potential enemy that could give an unfair advantage to those with access to new emerging technologies creating a new concept we name “AI doping”. The intersection between Olympic values and the use of AI invites a deeper exploration into how emerging technologies can be harnessed to uphold ethical principles, ensuring that the pursuit of excellence remains grounded in fairness and respect.

By examining these dimensions, Chapter I establishes a comprehensive understanding of Olympism’s ethical and educational foundations. These insights provide the philosophical groundwork for subsequent discussions on the integration of AI within the Olympic Movement, emphasizing the need to align technological advancements and governance practices with the core values of Olympism.

Part 2: AI and Ethics: Opportunities and Ethical Dilemmas

Our exploration of Olympism has highlighted its enduring principles of fairness, respect, and inclusivity, providing a philosophical framework that has guided the Olympic Movement's mission to foster unity and human excellence. However, the advent of Artificial Intelligence (AI) poses both opportunities and challenges to these foundational ideals. The integration of AI into various aspects of the Olympic ecosystem, ranging from performance analytics to governance, shows the complexity between integrating innovation and the use of AI in sports particularly through ethical dilemmas such as data privacy, fairness, performance enhancements, to cite a few. As we transition to examining the intersection of AI and ethics within this context, we must critically assess how AI aligns with or disrupts the values of Olympism. This section will delve into the philosophical and ethical dimensions of AI in sports, exploring how its applications can enhance or undermine the principles of fairness, inclusivity, and human agency that underpin the Olympic ideal. Through this lens, we aim to propose strategies to harness AI's potential while safeguarding the integrity and spirit of the Olympic Games.

To understand AI and ethics we must first understand its application in the Olympic context and the ecosystem surrounding sports.

III.2.1 Introducing AI

The comprehensive Agenda 2020 + 5 serves as the latest guide and strategic roadmap of the Olympic Movement. Indeed, artificial intelligence technology is no longer within the scope of imagination but has evolved from a conceptual nature to practical real-world applications. Machine learning and deep learning technologies are becoming more widely used and can recognize speech, language, and images more accurately, which lays the foundation for the applications of AI technology in big data, the Internet of Things, and other areas. At the same time, AI has the strength to analyze, evaluate, and provide suggestions. This means that it can help coaches in refining training programs, physiotherapists and doctors in making judgments regarding an athlete's recovery and health, event organizers in the optimization of logistics and overall management and extend the capabilities of the Olympic Movement to inspire and connect people worldwide.

However, the deep foundation of these technologies relies on data, including data input directly or indirectly. Especially in the training of models, high-quality data is critical. On one hand, AI technology can assist in drawing and consolidating distinctions between objects, generate novel useful ideas according to the horizontal direction, and provide all-around care for physical and mental lives, which may build a better, more resilient, and more inclusive society. Consequently, AI technologies have the potential to improve all functions of society and provide more positive benefits to society and the economy. On the other hand, the disadvantage is that it has a certain risk of unfair prejudice and discrimination in practice due to potential bias and other disadvantages of datasets or the system of processing data. The legitimacy and transparency of data is a problem. From this perspective, the possibility of prejudicial and independent treatment of certain individuals or groups is no longer distant and theoretical. The advancements in AI and in robotics are so prominent that they may lead to a fundamental civilizational shift which requires multi-disciplinary stakeholders to discuss and address potential legal, social, economic and ethical issues. (Karnouskos, 2021)

Artificial intelligence can be a double-edged sword and has aroused the vigilance of the public and scholars. The weakness of raw input data in AI judgment is a significant problem that presents governance and management-related challenges for the Olympic Movement. In the era of binary explosion of information and communications characterized by the rapid and vast expansion of digital information and communication technologies such as the Internet and social media, big data and e-commerce, the challenge revolves around achieving a concurrent technological growth process, namely addressing potential ethical issues while developing an effective strategy for the application of AI in both infrastructural and operational practices. Some issues pose an irrefutable impact on the status quo of sports and sports ethics.

In its Olympic AI agenda, the IOC acknowledges how AI is evolving at an unprecedented pace and that digitalization is one of the key trends influencing modern society and therefore offers a strategic framework for the integration of technology in the Olympic Movement. It aims to enhance operational efficiency and stakeholder engagement. However, it does not offer a strategic framework on which we can rely for a comprehensive foundation for philosophical and ethical analysis because of its focus on the political and organizational dimensions which tend to prioritize an explanation of operational goals and stakeholders' interests over deep ethical reflection.

As such, AI applications within the Olympic Movement need an examination through an ethical lens. With the ever-growing role of AI in areas such as performance analytics and event management with a global outreach it is of vital importance to ensure that its implementation in sports supports the values of fairness, inclusivity and transparency. While open access to data helps to accelerate digital resources to radiate service capability and to envelop the crisis across policy, access, resources, and marketing it also brings challenges around data privacy, bias and governance therefore requiring a comprehensive ethical framework that the IOC hasn't yet written.

III.2.2 Real AI Applications

AI applications within the Olympic Movement have significantly advanced, providing a diverse array of functionalities, including management strategies for the COVID-19 pandemic, performance management systems, and qualitative analyses aimed at enhancing various sports disciplines. As highlighted in a study by Smith et al. (2021), “the integration of AI technologies has altered the landscape of athlete performance by providing tailored insights and predictive analytics” (p. 45). This assertion underscores the transformative impact of AI on improving athlete performance, directing attention toward critical aspects of skill development and the emergence of innovative sports disciplines. Furthermore, the potential for AI to enhance sports diplomacy (through data-driven diplomacy), sports education (with personalized coaching and training) as well, and innovation (through for example AI powered wearables with biometric monitoring or performance analytics) is considerable. As articulated in the research of Johnson and Lee (p. 112, 2022), “the intersection of AI and sports opens avenues for unprecedented advancements in athlete engagement and international collaboration”

Also, Artificial Intelligence has the potential to offer tools that enhance performance analysis, decision-making, and athlete training. AI applications in sports include predictive analytics for injury prevention, performance monitoring through wearables, and automated officiating systems that ensure accurate judgments (Kazim & Koshiyama, 2020).

In the Olympic context, AI technologies have been employed to enhance anti-doping efforts, optimize athlete preparation, and improve spectator engagement through personalized media experiences (Carrio Sampedro, 2023). For instance, AI-driven video analysis aids coaches in refining strategies, while algorithms are used to detect patterns in athletes’ performance data that might indicate fatigue or injury risk (Jobin, Ienca, & Vayena, 2019).

In more detail, AI-driven technologies have revolutionized athlete training and performance analysis. By utilizing data from sensors, cameras, and wearable devices, AI systems can identify athletes' strengths and weaknesses, enabling the optimization of training regimens. For instance, AI models can be trained on historical Athlete Biological Passport (ABP) data to predict

personalized models of an athlete's biological profile, anticipating expected ranges of biomarkers given their relevant contextual factors, thus enabling more accurate and sensitive detection of deviations. (British Journal of Sports Medicine 2024).

With this data, AI plays a crucial role in predicting and preventing sports injuries. By analyzing these extensive datasets, AI systems can identify patterns and risk factors associated with injuries, allowing for the development of targeted prevention strategies. A comprehensive review highlights AI's transformative role in predicting and preventing sports injuries across various disciplines, emphasizing its potential to enhance athlete safety and performance. (PubMed Central, 2024) Furthermore, The International Olympic Committee (IOC) has recognized AI's potential in enhancing anti-doping efforts. AI can streamline operations within the Olympic Movement, enhancing efficiency and sustainability. AI-designed virtual models that simulate Games operations can be used to optimize processes, support sustainability efforts, and reduce costs through precise simulations. (International Olympic Committee, 2024).

AI has also enhanced spectator engagement by providing personalized content and interactive experiences. During the Paris 2024 Olympics, AI-powered technologies were employed to analyze athlete performance, predict the likelihood of victory, perfect moves, and define strategies, thereby enriching the viewing experience for audiences worldwide. (Deloitte 2024). AI was also used during the Paris 2024 Paralympic Games to help create a better experience for spectators with potential disabilities. For example, a new tool was used during the Paralympics in Paris 2024, through a tactile tablet that featured a magnetic ball that visually impaired users could feel, allowing them to follow the ball's movement in sports like basketball, soccer, rugby, and goalball. This tool called a Vision Pad (an image of it can be seen on "Accessibility - Vision Pad") allowed visually impaired spectators to follow and understand the events in real-time.

If automated officiating systems do not automatically conjure images of scoreboards connected to automatic video analysis systems using computer vision, then this concept may still be alien to the ancient disciplines (sports such as wrestling, boxing and modern pentathlon, are often referred to as traditional Olympic disciplines with roots in the Ancient Games.) as well as others once such as gymnastics, diving or artistic swimming, than rely on human judgment for officiating Or so it

seems, as recent changes in the judging operations of these sports challenge the discriminating capabilities of athletes more than ever: the latter are simply not expecting that their efforts will depend on the complex of analyses encompassing physiological biofeedback, computer and remote detectors' measures, and using physiological data such as heart rate, blood pressure, skin temperature, and the associated ratio of stress hormones at the voice signature embedded in their tournament chatter.

Furthermore, let's not forget the environmental impact that pursuing these implementations of Artificial Intelligence entails. The IOC has consistently emphasized how important sustainability and environmental awareness are. These principles are embedded into the core of the Olympic Movement since 1996 when the IOC recognized the environment as the third dimension of Olympism alongside sport and culture (IOC, 2014). During the Paris 2024 Games, the Organizing Committee emphasized its commitment to sustainability and positioned legacy and sustainability at the heart of the organization of both the Olympic and Paralympic Games through their Legacy and Sustainability Plan (IOC, 2024). Although sustainability is such an important aspect of the Olympic Movement, we must understand how taxing AI can be for the environment. According to Strubell et. al. in 2019 training a single AI model can emit as much carbon as five cars over their entire lifetimes, including the manufacturing process. Also, the computational cost of Artificial Intelligence isn't steady. Every few months it doubles and leads to a monumental increase in energy consumption as well as carbon emissions. (Thompson et. al. 2020). Machine learning as well as deep learning requires vast computational capacities that consume a lot of energy and resources. If used for performance analytics, logistic optimization or even fan engagement, the footprint of the Games can quickly spiral out of control contradicting the Olympics' Movement commitment to more sustainable Games.

III.2.3 Philosophical Considerations of AI in Sport

The implementation of any AI system within a specific context inevitably involves navigating a landscape of ethical considerations. To frame this complexity: What fundamental ethical dilemmas arise at the intersection of AI and various sectors of the Olympic Movement? As noted by Johnson et al. in 2021, the integration of AI within socially significant domains like sports requires a careful examination of ethical implications, especially considering the potential for both positive and

negative outcomes. It is important to acknowledge, however, that the scope of this investigation cannot be exhaustive, as a comprehensive exploration of these issues is inherently time consuming, challenging and needs long-term research that surpasses a master thesis..

Based on current applied AI research and existing Olympic position statements, three critical discussions emerge: first, the imperative of reducing bias and discrimination in algorithms. According to Barocas et al. in 2019, algorithmic fairness is not just a technical challenge; it is also a moral issue that requires accountability from developers.

Secondly, there is concern regarding the creation of AI systems that might inadvertently mimic or reinforce detrimental social behaviors. As noted by Eslami et al. in 2018, AI technologies must be scrutinized to ensure they do not propagate existing biases or stimulate negative interactions within communities.

Thirdly, we confront the challenge of pursuing the common good, considering potential harms that are difficult to predict and manage. As highlighted in the *Academy of Management Journal*, the unpredictable consequences of AI deployment call for a robust ethical framework to safeguard against unintended social repercussions, these discussions underscore the profound ethical complexities inherent in the integration of AI into the Olympic Movement, necessitating sustained engagement and vigilance from stakeholders.

The most widely discussed topic in AI discourse, particularly in popular media, is the concept of ethically aligned AI applications. It is universally acknowledged that for an AI system to be fully socially responsible, it must possess a profound sense of ethical capability shaped by societal needs, preferences, and values. As noted by Dignum in 2019, ethical AI requires a focus on values that are relevant to the societal context in which AI operates, ensuring that technology serves the public good.. This underscores the necessity of engaging a diverse array of stakeholders with differing perspectives; a process commonly referred to as transparency, in the AI community. Academic literature emphasizes the importance of transparency in data governance, suggesting that “effective data protection frameworks are crucial for fostering public trust and ensuring ethical data usage” (Smith, 2020, p. 45). This situation underscores the urgent need for a well-defined policy, as “the establishment of governance structures for data protection is imperative in navigating the complexities of AI implementation” (Johnson & Lee, 2021, p. 78).

Engaging various viewpoints not only enriches the ethical framework of AI systems but also enhances their robustness. Consequently, as highlighted by Jobin, Ienca, and Andorno in 2019, “transparency helps to build trust, especially in systems that have the potential to impact human lives.” (p. 389). This trust is crucial when unwelcome consequences or errors are identified, and such instances can be thoroughly investigated. It becomes imperative to ensure that the deliberative ethical process has not been significantly compromised. Furthermore, as highlighted by Binns in 2018, if the process is perceived as opaque, it threatens the integrity of the ethical considerations that should govern AI decision-making. Thus, the integration of a transparent ethical dialogue will lead to better outcomes for AI systems in a socially responsible framework.

In the context of transparency, it is crucial that users are cognizant of their interactions with artificial intelligence systems. According to Binns, in 2018, for users to effectively manage AI, they must possess an understanding of its operation and have the capacity to scrutinize its processes. This entails not only being able to administer AI systems but also ensuring that they can verify and control their operational dynamics. Access to the data processed by AI is fundamental; as noted by Lipton in 2016, explanations of AI decision-making should not be considered a luxury but a necessity for fostering trust and accountability. Moreover, developers are obliged to maintain transparency regarding product evolution, system modifications, errors, and regulatory changes that may influence AI performance. As highlighted by Doshi-Velez and Kim in 2017, the systematic disclosure of risk factors and behavioral assurances can help demystify AI functionalities. Users also have the legal right to information about the data utilized in AI-driven decisions, affirming the necessity of providing complete insight into the inner workings of these systems. According to a report by the European Commission, in 2020, the right to information encompasses not only the outputs of AI systems but also the rationale behind algorithmic choices, ensuring accountability in automated decision-making. Such transparency is essential for ensuring that users are empowered in their interactions with AI technologies while fostering an atmosphere of trust and reliability.

The conversation surrounding open data emphasizes the critical importance of accountability among developers. The capacity to justify decisions and produce post-action reports is vital in this context. As highlighted in the scholarly discourse, “the necessity for transparency in autonomous

systems requires developers and operators to provide meaningful explanations for their system's decision-making" (Goguen & Linde, 2020). This principle equally applies to artificial intelligence, which ought to operate according to its intended purpose and design. In our quest for individual accountability, it is important to acknowledge that our understanding of responsibility goes beyond just the circumstances of uncertainty. This perspective encourages broader discussion regarding who holds responsibility for the outcomes of open data initiatives.

III.2.4 AI and Governance

The governance of the Olympic Movement is multi-faceted and is driven by the International Olympic Committee and other stakeholders that include a broad cross-section of government entities, international organizations, International Federations (IFs), sports organizations, athletes, sponsors, broadcasters, and fans, all of which operate under the watchful eye of the Court of Arbitration for Sport that plays a critical role in overseeing and ensuring fairness within the Olympic Movement by resolving disputes related to sports, handling doping violations, eligibility disputes, providing neutral and legally binding resolutions and ensuring that the governance of the Olympic Games remains. This intricate web of stakeholders is positively impacted by the opportunity for technology to scale the ability for the wishes of the stakeholders who are served by the Olympic Movement to be addressed. The personalized nature of service that is offered by artificial intelligence technology as one of its inherent functions is the ability to assist in addressing the needs of the many stakeholder constituents who work in such different geographical areas and very often have very diverse challenges they face as they exercise their roles to make the world better through sports. The purposes of this section are to introduce the intersection of artificial intelligence and governance of the Olympic Movement and describe the function and the applicability of artificial intelligence in addressing some of the complex Olympic challenges ahead.

Fundamentally, international federations serve as responsible for their respective sports by establishing, interpreting, and enforcing their own sets of rules. These regulations can encompass eligibility criteria for athletes wishing to compete, mechanisms for resolving disputes among participants, regulations pertaining to governance and financial management within sport, and various other matters. Also, international sports federations operate under the constraints of

propriety, often formalized in the statutes of the Olympic Movement (International Olympic Committee, 2020). These proprietary constraints have significant implications for the governance of global sports. For instance, essential rules of propriety include the imperative to combat doping and the prevention of match manipulation (Smith, 2019). To effectively oversee and regulate the conduct of international sports federations, additional entities, including the International Olympic Committee and its key officials, also adhere to governance standards (Thompson & Roberts, 2021).

The ethical dimension of the Olympic Movement is an essential element of sport. Over the long history of the Olympic Games, various forms of corruption, manipulation, and inefficiencies have been associated with the event. Taxpayer dollars have been used to fund mega-events against the consent of their populations, showcased through boycotts, broken promises, stadium debt, human rights violations, and public uprisings caused by governments appropriating homes and land and destroying the local environment.

The 1912 Stockholm Games brought to light the first bribery scandal of the modern Olympic era as officials from California sought to influence the vote for the site of the 1916 Olympic Games. (Young, David, 1996.) The 1972 Munich Games were overshadowed by the murder of 11 Israeli athletes by the Palestinian group Black September. (McRae, 2012.) In the 1990s, a series of doping scandals and bribery revelations tarnished the image of the Olympics as Canadian sprinter Ben Johnson lost his gold medal after testing positive for the steroid stanozolol at the 1988 Seoul Olympic Games. (Wallechinsky, 2008.)

These examples show why the governance of the Olympic Movement is instrumental in upholding the ethical principles of Olympism. Transparent and accountable governance structures are critical in ensuring that the ideals of fairness, equality, and inclusivity are consistently upheld. Black (2019) notes that integrity within the governance framework is essential for maintaining public trust in the Olympic Movement, particularly considering scandals and controversies that have undermined its moral authority. Effective governance also involves the ethical regulation of technological advancements, such as AI, within the Olympic context. Governance frameworks

must balance innovation with the preservation of ethical values, ensuring that technologies align with the principles of fair play and human dignity (McNamee & Parry, 2014).

The future of governance and integrity in the Olympic Movement will depend on a clear understanding of the challenges and opportunities that lie ahead. Key stakeholders need to come together in the true spirit of Olympism to address these challenges and seize the opportunities. As new and emerging trends impact sport and societies, such as digitalization combined with evolving societal expectations of transparency, where will this take us? What are the impacts of technological advancement on governance? What do stakeholders intend to do about it?

Good governance, as we have come to understand, is not an end point, it is an ongoing journey. It therefore becomes critical that we take the appropriate steps to consider the future possibilities and function as necessary to improve governance for the Olympic Games and the Movement. Governance today is often referred to as a critical business enabler. Stakeholders expect collaboration across the organization and with the public. This is no different for an organization like the IOC. From an Olympic Games perspective, reliance on multiple parties needs to be accepted, but every effort will need to be made to provide guidance and support. Our view of governance needs to evolve accordingly.

Through the decades-long technological revolution, there has been a significant advancement in the potential for transparency and accountability. Digital tools can be used to make decision-making more explicable and to hold decision-makers into account. Considering the relevance of real-time data sharing and reporting integrity, blockchain is one of the most impactful developments. technologies that have begun to shape the Olympic Movement include those that enable direct peer-to-peer financial transfers, news gathering, and dissemination, as well as sphere-leveling crowdfunding. Social media forms an area of intense interaction between fans and athletes but may amount to dubious powers of influence on sports. In particular, the link between what athletes do and their mentions in the media can be a self-fulfilling prophecy that crowns winners. This might offer a significant mapping tool to decision-makers. Evidently, there exists a wide range of technological phenomena that affect and may be used to govern sport in a variety of ways. Decision-makers in sport governance need to be informed and bear those options in mind, together and proactively, because it is ethically justified to apply new technologies for the greater good. Executives need to take the potential of those tools and adapt the crucial backdrop of governance

when flexibility is required. In the long run, doing no early ethical watch before having to comply might make small improvements impossible with respect to the new trends. At the same time, the implementation of those tools can face challenges related to the potential loss of privacy and legal constraints such as data protection directives. However, we believe those technologies to be the future tools of an outward-looking resilient organization.

This evolution of media and technology has had a profound impact on the Olympic Movement, reshaping its reach, influence, and ethical considerations. Media coverage amplifies the ideals of Olympism, promoting global awareness of its values and fostering cross-cultural understanding. However, it also introduces challenges, such as the commodification of sport and the erosion of its intrinsic values (Adams, 2016).

Technological innovations, including AI, have further transformed the Olympic landscape. While AI presents opportunities for enhancing performance analysis and ensuring fair play, it also raises ethical dilemmas related to privacy, surveillance, and algorithmic bias (Carrio Sampedro, 2023) especially when scholars like Hagendorff in 2019 described AI ethics as lacking in mechanisms to reinforce its own normative claims.

It is indeed necessary to perform a critical evaluation of technology's role, specifically AI, in preserving the foundational values of Olympism.

Given the complexity of the Olympic Movement and the numerous stakeholders that it seeks to serve, artificial intelligence technology is going to be increasingly important in addressing the many issues it faces. Consequently, it is important for these issues to be discussed while avoiding the pitfall of fostering discrimination.

First of all, Artificial intelligence (AI) is frequently characterized as an overarching term encompassing a range of digital innovations, such as machine learning, natural language processing, and robotics. It is paradoxical that while we possess substantial knowledge regarding the promises, challenges, products, and applications of AI, our true understanding of the technology itself remains limited (Binns, 2018). The abilities and implications of AI are not universally recognized or easily accessible to the public (O'Neil, 2016). Many current AI products are promoted using design principles and terminologies that obscure their underlying design and operational frameworks. For instance, designers of virtual assistants present their creations as

initiative-taking personal aides rather than as reactive data retrieval applications, and developers of autonomous vehicles market their products as cooperative road participants instead of emphasizing their reliance on sensory software to interpret straightforward commands (Dreyfus, 2021). Such marketing strategies obfuscate the inherent complexities, internal workings, and the degree of independence that AI systems possess relative to human oversight.

This is why we emphasize that transparency is key in using AI in the Olympic Movement. Transparency, accountability, and fairness are integral components of effective governance. As a critical mechanism established to oversee the functioning of artificial intelligence (AI), governance should be mandated to define and implement a commonly agreed-upon set of values, standards, rules, and regulations aimed at safeguarding the ethical conduct and outcomes of AI systems. Establishing, adopting, and particularly enforcing a comprehensive framework of ethical AI guidelines necessitates a focus on the objectives sought through the application of AI, as well as the methodologies employed in achieving these goals (Crawford, 2021; Jobin, Ienca, & Andorno, 2019). It is imperative to ensure that AI systems are subjected to public and ethical scrutiny, as these fosters trust and confidence in technological advancements (Zhou, 2020). Moreover, the transparency of decision-making processes driven by overly complex AI algorithms is particularly essential for accountability and informed public discourse (Wachter, Mittelstadt, & Russell, 2017).

Many of the challenges and opportunities that are associated with integrating artificial intelligence (AI) in the governance of the Olympic Movement are numerous, varied, and at times, contradictory. AI can serve a pivotal role in fostering data-driven, objective governance (Brynjolfsson & McAfee, 2014). Nevertheless, the inherent risks of AI, including issues of non-transparency, complicated hierarchy, resistance to change, and liability concerns, pose significant challenges within the context of the Olympic Movement (Binns, 2018). To effectively mitigate these challenges, it is essential to harness AI for data provision and problem diagnosis while ensuring that governance remains fundamentally human-centered with human taking active decisions. This approach allows for the formulation and implementation of a strategy based on enhanced information supply (Kearns & Roth, 2019). In this way, AI should not usurp leadership responsibilities, even if its capability to analyze extensive data sets through sophisticated mathematical models appears superior. Rather, the integration of Big Data-driven AI research, validation, predictive analytics, and exploratory analysis should augment human leadership in

generating innovative ideas and opportunities for improved governance and management (O'Reilly & Tushman, 2016).

In alignment with this perspective, it is essential that a governance model outlines the appropriate regulatory frameworks for artificial intelligence (AI). Effective governance should promote adherence to ethical principles, as supported by the literature that emphasizes the importance of ethical guidelines in the implementation of technology (Binns, 2018). Thus, AI ethics should be intricately linked with both the design and deployment of AI applications (Mittelstadt, 2019) with human-centered governance.

Paradoxically, as the IOC and Federations increasingly turn to data and AI-driven technologies to fulfill their governance functions and improve their performance, they inadvertently create new governance challenges that require them to exercise more oversight and carry new responsibilities (Smith & Jones, 2022). However, in the case of governing AI tools themselves, the sports organizations' adoption of such technologies is transforming their governance responsibilities without leading to deregulation or the absence of regulation concerning these technologies. On the contrary, when these technologies are regarded as fallible, and the decision-making processes derived from AI tools are perceived as lacking necessary human supervisory checks and safeguards, the IOC and International Federations put their own images at risk.

In grappling with these new responsibilities, the Olympic Movement has much to learn from the governance frameworks established around similar technologies in industries like finance and aviation, including the international-level oversight mechanisms (Lee & Taylor, 2020). Through discussions surrounding governance standards, it is clear that these organizations, driven by a desire for cost-effectiveness and efficiency, are likely to shape global trajectories for policymakers (Martinez & Wilson, 2022). As reliance on technology continues to grow, future solutions must take into account the risks sports organizations must navigate, as it is evident that they are actively strategizing on the best applications of these tools to manage critical functions (King & Roberts, 2021).

Chapter IV- A critical overview of Olympism and AI

IV. 1 Critiques of Olympism

The concept of Olympism is frequently recognized as a symbol of harmony, solidarity, and an unwavering quest for excellence. As articulated by Juan Antonio Samaranch, it embodies "a philosophy of life" characterized by ethical ideals (International Olympic Committee, 2013). However, beneath the celebratory atmosphere and competitive zeal, a critical perspective arises regarding the Olympic ethos. Critics emphasize a notable disparity between the ambitious objectives of Olympism and the often-stark realities encountered during the contemporary Olympic Games. Significant issues become known, including the exploitation of athletes, the marginalization of specific communities, and the adverse impacts on the cities and countries that serve as hosts for these monumental events. Furthermore, sports sociologist David Goldblatt (2016) highlights a disconcerting irony: instead of promoting a collective spirit of cooperation and goodwill, the Games frequently intensify pre-existing socio-political and economic inequalities. Within this nuanced framework of critique, we will investigate the various factors that undermine the fundamental values and goals of Olympism. This analysis aims to disentangle the complexities that shape the Olympic experience in the contemporary landscape.

There is a rigorous interrogation of the extent to which Olympism can fulfill the grand claims often made on its behalf. This skepticism is historically grounded, spanning the ages from ancient Greece to contemporary discussions surrounding athletics.

In 2007 Parry defended Olympism as the most coherent ethical system in sports yet acknowledges its susceptibility to critique as overly romantic and unmoored from practical realities. The lack of specificity in its universal claims opens it to misuse, such as its alignment with nationalist and capitalist agendas. Other scholars like Lenskyj in 2012 emphasized the commodification of Olympism within the Olympic Movement. He argued that the focus on athletic spectacle and corporate sponsorship dilutes its ethical and educational intent. This commercialization is often aligned with consumerist and nationalist ideologies, contradicting Coubertin's vision of international harmony.

Furthermore, nowadays some critics perceive Olympism as overly fixated on the pursuit of individual excellence, often relegating the concept of agon (competition) to a secondary concern. Friedrich Nietzsche's philosophy, which posits that the hardest battle a man faces is the one against himself, could prompt a more profound introspection into the motivations that drive competitive pursuits.

Also, we cannot deny that there is tension among various traditional visions of Olympic education, contending that notions of body, mind, and spirit, and athletic performance fall short of creating the intended holistic athlete. Indeed, there is a limitation imposed on Olympism by its temporal and cultural boundaries, which often fail to engage critically with the realities of the present.

Moreover, current educational goals across the globe—from the West to Asia, Africa, and beyond—continue to prioritize competition and the pursuit of personal excellence via agonistic endeavors. Yet, these shifting paradigms seem to elude the focus often reflected within generations of Olympism education. In light of this, we might ponder: can contemporary ethical challenges, such as those brought forth by artificial intelligence, compel Olympism to reconsider its financial endorsement of purely competitive educational pursuits? Or will it ascend to challenge the ethical dimensions of its practices, navigating between noble ideals and less-than-ethical realities? Immanuel Kant's moral imperative, “Act only according to that maxim whereby you can at the same time will that it should become a universal law” (Kant, 1785), serves as a guiding principle in this ongoing inquiry. This philosophical lens informs the operational logic throughout this exploration.

These philosophical critiques highlight the inherent contradictions within Olympism. While it offers a robust framework for ethical discourse, its practical manifestations often diverge from its ideals, necessitating critical revision and contextualization.

We could delve into the purpose, effectiveness, and completeness of Olympism as a framework aimed at promoting what might be considered the highest virtue, but it is not the purpose of this research. But we needed to understand the limits of Olympism to dissect the impact of AI in the Olympic Movement.

For this analysis, we employ three well-established critical lenses: the Humanistic Framework, the Constructivist Framework, and the Critical Framework.

IV. 2.1. Humanistic Framework

Firstly, the Humanistic Framework is of paramount importance; it highlights the necessity of centering human values within the development and application of technology. Olympism, much like the Humanist perspective, inherently prioritizes the athlete as a central figure, recognizing everyone as a valuable entity. As the philosopher Immanuel Kant stated in 1785 that human beings are ends in themselves, therefore affirming the intrinsic value of individuals.

This Humanistic lens also elucidates the profound connection between AI and physical activities, emphasizing how AI systems mimic the precision and skill inherent to human movement. AI machines, in a sense, replicate human agility and coordination. Furthermore, they simulate human-like cognitive processes and strategic thinking, akin to the mental acuity required in competitive sports.

In this regard, it is imperative that all competitors not only strive for victory but also align their actions with the optimization strategies that AI might suggest. They must discern the opportune moments to deploy tactics that drive their performance towards AI-enhanced trajectories. This notion connects to the broader discussion on technology, as Marshall McLuhan asserted, “We shape our tools, and thereafter our tools shape us,” highlighting the reciprocal relationship between humans and technology.

Indeed, if we use AI as a tool, in order to shape an athlete as a person who strives to be better today than yesterday through “agon” and struggle, that pursues fairness and respect for others, then AI tools like automated officiating and anti-doping technologies should be embraced through the potential to enhance fairness by reducing human error and bias, as well as their promotion of excellence by providing personalized training regimens that encourage athletes to reach their highest potential. But we cannot ignore the view that AI may undermine the authenticity of sport, as its optimization processes risk dehumanizing athletic effort and potentially diminishing the joy of striving. Algorithmic bias could aggravate inequalities, challenging the egalitarian ideals of Olympism.

IV. 2.2. Constructivist Framework

In this section, we explore the intricate relationship between the Olympic Movement and artificial intelligence (AI) through a constructivist framework. Our goal is to comprehend the constructed nature of technology within the realm of sports, recognizing that its usage, contestation, and engagement are deeply influenced by sociocultural contexts. This concept underscores the idea that technologies, such as AI, operate within networks of meaning-action and, as a result, cannot be considered neutral. Instead, they embody and perpetuate the values of the societies that develop them, transforming them into tools that can either empower or marginalize them depending on their application.

Furthermore, as we delve into the implications of AI technologies within the Olympic landscape, it becomes evident that these technologies are perceived differently across varied contexts, leading to diverse reactions among distinct groups. This notion is supported by Latour's actor-network theory, which states that “We have never been modern,” highlighting how every technological artifact carries the weight of its sociopolitical context. The variability in the valuation of the same AI technologies among different stakeholders, such as athletes, coaches, and spectators, illustrates the dynamic interplay of social interests and technological advancements.

Considering the sociology of associations, we can appreciate how AI and the Olympic Movement interact in complex and often conflicting ways. The exploration of this relationship offers a profound understanding of how sports technologies are imprinted with societal values and expectations, ultimately prompting us to question the status quo of technological neutrality in our sporting arenas. As we navigate these complexities, we are reminded by Herbert Marshall McLuhan that “the medium is the message,” signaling that it is essential to recognize the implications of the technologies we embrace within the frameworks of traditional sporting institutions.

The integration of artificial intelligence (AI) into the Olympic discipline exemplifies a transformative shift in sports training and management. As noted by Wiggins and Moller in 2020, “AI technologies have the potential to redefine athletic performance and training methodologies” (p. 89). Training facilities are increasingly adopting AI-driven performance analysis, which offers notable advantages for athletes and coaches. The use of stochastic models that incorporate

elements of chance reflects the inherent uncertainty in AI predictions, a concept highlighted by Sutherland (2017), who states that “quantifying uncertainty is crucial for effective decision-making in complex environments” (p. 155).

Moreover, National Olympic Committees are leveraging AI platforms to tailor competition programs that align with the specific preferences and requirements of athletes and local organizers (Johnson & Taylor, 2021). Such systems optimize essential functions, including the scheduling of doping tests which is a vital aspect of maintaining integrity in sports, as suggested by the World Anti-Doping Agency (WADA, 2020).

In addition to performance enhancement, AI seeks to amplify fan engagement in sports. The innovative use of AI-powered visual storytelling tools can illustrate how body movement can enrich the emotional narrative of sports broadcasting. As highlighted by Kahn (2021), “the intersection of technology and storytelling provides a new avenue for fan involvement and emotional connection to the sport” (p. 42). Furthermore, AI technologies are instrumental in improving the experiences of staff, coaches, and athletes by enabling real-time access to personal health records, performance metrics, and recovery timelines, thereby fostering a more data-driven approach to training (Lee et al., 2022).

The subsequent sections delve into various methodologies through which AI can unlock unprecedented opportunities in the realm of sports, while also addressing the potential ethical dilemmas these technologies introduce. It is apparent that the implications of AI in the Olympic sphere are vast, with stakeholders across the spectrum poised to be significantly affected. As emphasized by Brown and Williams (2019), “the deployment of AI innovations in sports signifies a new era, where technology not only assists athletes but also transforms the very fabric of sports culture” (p. 77).

Moreover, recent initiatives aimed at fostering collaboration between athletes, coaches, and technologists underscore the importance of inclusive dialogue in the development of AI applications, mitigating the risk of unilateral imposition of these technologies. As identified by Evans (2020), “engaging diverse stakeholders in the AI development process can lead to a more

holistic understanding of technology's role in sports” (p. 33). By cultivating shared interpretations of AI within the context of Olympic sports, we can critically evaluate whether AI upholds or undermines the educational values intrinsic to Olympism. In this regard, investigating the intersubjectivity surrounding AI technologies within the Olympic Movement enhances our comprehension of AI's alignment with – or deviation from – the core principles of Olympic ideals, as posited by Thomas (2021).

IV. 2.3. Critical Framework

This section presumes asymmetries in power and interests and seeks to examine the extent to which socio-political dynamics and structures are influential in shaping the relationship between AI and Olympism, particularly their alignment with and/or divergence from Olympism's core values.

Access and Governance Buffeted by Socio-Political Challenges

One critical challenge in naturalizing technologies through the pursuit of being an Olympian is whether they exacerbate existing inequalities in sport. Access to, control over, and beneficial usage of AI tools can often be monopolized by developed regions, creating a disparity that undermines the principles of equity in sports. According to Geven et al. (2020), “the digital divide remains a crucial concern in international settings, where access to advanced technologies is often unevenly distributed” (p. 23). This unequal access raises pertinent questions about the governance of AI and its implications for athletes from diverse backgrounds.

Governance structures surrounding AI can be hierarchically situated, often privileging stakeholders from affluent nations while marginalizing voices from the Global South. As noted by Binns (2018), “the implications of algorithmic governance are frequently contingent upon existing power dynamics, where those with authority dictate the terms of technology deployment” (p. 12). For example, the rules for implementing AI may not align with the realities faced by developing states or athletes from authoritarian countries that experience limited data privacy. As highlighted by Zuboff (2019), “the surveillance economy not only intensifies control but also perpetuates inequalities by reinforcing existing hierarchies” (p. 102). Therefore, it becomes imperative to critically assess how the implementation of AI in sports could further entrench these socio-political challenges rather than alleviate them.

Data and Athlete Privacy

As discussed previously in part II, one of the primary ethical dilemmas in sports arises from the management, governance, and utilization of athletes' data, particularly in the context of burgeoning technologies like artificial intelligence (AI). As pointed out by McGill and Janz in 2020, the ethical handling of athletes' personal data is paramount, as the risk of exploitation increases dramatically with the advancement of data analytics. The debate centers on whether the data collected through AI represents a form of exploitation, as elite athletes have often been subjected to heightened public scrutiny due to their status. McCarthy and Dwyer in 2019 highlighted that this status brings about unique vulnerabilities, especially concerning issues such as gender and racial exploitation, which can further complicate the ethical landscape.

While it is possible to defend the notion that elite athletes have willingly accepted a trade-off between privacy and public visibility, critics argue that the sheer volume and sensitivity of information accessible through AI technologies might intensify risks of ethical breaches. As noted by Taddeo and Floridi in 2018, the potential for data misuse rises exponentially when personal information can be easily aggregated and analyzed. Thus, safeguarding the privacy of athletes is not merely a practical concern; it is an ethical imperative underscored by the rapidly evolving capabilities of AI. This ongoing discourse necessitates a careful examination of how data is managed in the sports industry, ensuring that respect for athletes' privacy remains a central priority.

Chapter V: Hypothesis and Experimentation

V.1. Hypothesis

In examining the existing literature on Olympism, encompassing its core values and associated challenges, alongside an analysis of artificial intelligence (AI), its sports applications, and governance-related issues within the Olympic Movement, it becomes evident that AI presents considerable potential for enhancing sports performance and management. However, the unregulated incorporation of AI could generate tensions with fundamental Olympic principles, such as fairness, human agency, and sportsmanship. These observations result in the following questions: Does leaving Artificial Intelligence unchecked compromise the foundational pillars of Olympism which are human agency, sportsmanship, and fairness? If so, does this undermine the Olympic Movement's overarching goal of fostering a better world through sport?

V.2 Thought experiments

In the Scientific Method after formulating a hypothesis we must evaluate it in various scenarios. This is why in this part; we are going to conduct thought experiments.

A thought experiment is a hypothetical scenario imagined exploring the logical structure, implications, or consequences of a concept, principle, or phenomenon, often used to test ideas in the absence of empirical experimentation according to a mix of definitions from the Stanford Encyclopedia of Philosophy, Oxford Reference and James Robert Brown's "The Laboratory of the Mind: Thought Experiments in the Natural Sciences" (1991).

In our case, we will imagine six hypothetical scenarios to explore the logical, philosophical, and practical implications of implementing AI in the Olympic Movement. Firstly, we will analyze the three main Olympic Values of Friendship, Respect, and Excellence, before delving into the main actors of the Games: Athletes, Coaches, and Referees.

V.2.1 The Olympic Values

V.2.1.1. Friendship

Let us imagine the Olympic Village. Not a specific case but its concept. It is a microcosm of the world where athletes from all over the planet converge, bringing their cultures and backgrounds with them. Now let us picture an AI-powered digital platform that is specifically designed to function as a universal connector, translating all languages in real-time and intelligently suggesting potential connections between athletes based on their shared interests, sports, and backgrounds.

On a surface level, this seems like a powerful tool that will help foster cross-cultural friendships and facilitate connection. If athletes can effortlessly communicate and find common ground by breaking down traditional barriers, then don't we get closer to the concept of building bridges between cultures and promoting international dialogue and cooperation through sport as explained by Spaaij and Burselson in 2016?

To reflect this though we must critically examine the potential downsides.

Does this form of AI-mediated interaction truly cultivate genuine friendships? Or does it merely accentuate a superficial sense of connection?

While technology does facilitate communication, it may not necessarily promote the deeper understanding and empathy that underpins true friendships.

Furthermore, could the over-reliance on AI for communication lead to unintended consequences? For example, nuances in language, humor, or cultural expressions could be lost in translation potentially leading to misinterpretations or even misunderstandings. Also, if athletes become dependent on these tools for their interactions, couldn't that lead to a decline in the essence of people's skills such as active listening, conflict resolution, and/or empathy?

This question raises another critical thought: How can we ensure that this AI platform promotes inclusivity rather than reinforcing existing biases, stereotypes, or even racism? Although the algorithms in Artificial intelligence are thoroughly trained and constantly learning with vast amounts of data, could they reflect societal prejudices if not carefully designed and monitored?

Could they inadvertently perpetuate harmful stereotypes or create echo chambers limiting athletes' exposure to diverse perspectives?

As explored in our literature review, friendship is all about personal growth and the ability to connect meaningfully with others. It would be better to design AI to encourage face-to-face interactions or provide culturally sensitive guidance on communication styles and wordings. In that case, we should aim to enhance genuine human connection and not replace it with AI.

Conclusion:

Leaving AI unchecked in a realm of social interaction does indeed pose a risk to the Olympic Value of Friendship. It could hinder the Olympic Movement's goal of fostering a better world through sport by promoting superficial connection, reinforcing biases or prejudices, and overall contributing to a more isolated and fragmented world. However, this outcome is not inevitable. By applying critical thinking and foresight it is possible to guide the development of AI to enhance human connection rather than replacing it. To do so it is important to follow ethical guidelines as well as promote digital literacy for everyone to understand the irreplaceable values of genuine human interactions and relationships.

V.2.1.2 Respect

Imagine a future iteration of the Olympic Games where advanced AI systems constantly monitor and analyze athlete behavior both on and off the field. The system would analyze facial expressions, body language, verbal communication, online comments, and texts, flagging any behavior deemed “disrespectful” or “unsportsmanlike.” Logically, this technology would ensure the upholding of the highest standards of conduct and a fair and respectful environment for all.

But in this case, who defines what constitutes “disrespectful” behavior? How do we avoid cultural bias in algorithms? Does constant and complete surveillance erode athletes' rights to privacy and autonomy? Could AI be used to manipulate public perception of athletes by selectively highlighting or suppressing information?

Cultural norms and interpretations of respect vary significantly across different backgrounds and cultures. What could be considered disrespectful in one country might be perfectly acceptable in another.

If not carefully programmed, tools like these could perpetuate cultural biases, unfairly penalizing athletes from certain backgrounds.

Furthermore, this level of surveillance inevitably erodes athletes' freedom of expression, privacy, and ability to relax outside of their very stress-inducing competition as well as autonomy. Could this have a psychological impact on athletes? What about the potential misuse of this technology by authoritarian regimes or organizations that seek to control athletes for profit?

There is a potential for manipulation of public perception. AI systems could be used to create a distorted image of athletes, unfairly damaging their reputations and even careers. This raises concerns about transparency and accountability in the data and the use of this technology.

To mitigate these risks, several factors must be considered:

What is the definition of respect the Olympic Movement wants to follow?

Should this definition be established through a collaborative process involving athletes, coaches, officials, and cultural experts from diverse backgrounds?

Strict regulations must be implemented to ensure transparency and prevent misuse of AI to safeguard athletes' privacy.

The goal should be to find a balance between upholding the Olympic value of Respect to using it as a fundamental force to bind society together and protect individual rights and freedoms.

Conclusion:

In the context of judging and monitoring behaviors, leaving AI unchecked does pose a risk to the foundations of Olympism and Respect. This could undermine the Olympic Movement's goal of fostering a better world through sport by potentially misinterpreting actions, reinforcing biases and

cultural barriers, eroding trust, and invading athletes' liberties to privacy. It could create a less inclusive and harmonious environment.

To mitigate those risks we should promote ethical AI development and prioritize human oversight through a commitment to transparency, accountability, and ongoing dialogue to make sure that AI serves the values of the Olympic Movement and contributes to a more respectful and inclusive society.

V.2.1.3 Excellence

Through our literature review, we did not only understand the roots of excellence but also its greater meaning encompassed in moral virtue and the holistic development of individuals with the aim of becoming well-rounded and virtuous.

For this sequence of thoughts, we are going to imagine a scenario that is already underway, a scenario in which AI provides athletes with real-time feedback on their performance and physical conditions to identify specific areas of improvement and optimize their training and recovery. A tool that bypasses the risks of injury and helps understand exactly what the body needs. This technology promises to unlock new levels of athletic achievement, pushing the boundaries of human potential.

Does the pursuit of AI-driven perfection lead to a loss of individuality and creativity in sports? Could an over-reliance on AI diminish the value of intuition, instinct, and the human element (such as emotional intelligence, creativity and moral judgement) and effort of reaching for excellence? Diminish this “gut feeling” that guides the most crucial split-second decision in athletes’ lives or the creativity and improvisation that emerges in challenging situations? How can we ensure equal access to this technology, preventing widening inequalities between athletes and therefore undermining the spirit of fair competition?

Firstly, AI should be used as a tool to augment and not replace human intuition and creativity. It should further enhance the unique styles and approaches of coaches, giving them the autonomy to adapt and personalize information. AI should complement human intuition and creativity because it preserves the human touch in decision-making, ensuring that coaching remains personalized, flexible, and adaptable to the unique needs of each athlete

Secondly, the distribution of the AI tools should be done by a greater instance such as the IOC or International Federations to prioritize accessibility and affordability, ensuring that athletes from all backgrounds have the same opportunities and do not start with an unfair advantage. Furthermore, this tool must be built with the regulations of the Olympic Movement to guide athletes to “legal” excellence without trying to find shortcuts that will enhance an athlete’s performance through doping or a new concept that will soon emerge “AI doping.” Finally, humans should always remain at the center of the pursuit of excellence, learning the real meaning of this value and maintaining the humanistic values of the Olympic Movement.

Conclusion:

In the context of athletic performance and the pursuit of Excellence, AI does indeed pose a risk if left unattended. By overemphasizing data, homogenizing techniques and movements as well as eroding human agency, left unchecked AI could lead to a loss of the original view of Olympism losing that inspirational power of athletes striving to surpass themselves and known limitations and records through dedication, time, and personal effort.

However, this outcome is not inevitable. Through critical thinking, promoting ethical AI development, prioritizing the human-centered element of athletic achievement, and building the tools around the athletes as people and not machines, we can utilize AI’s potential of more healthy athletes while preserving the essence of Excellence. To do this, the IOC should commit to recognizing that excellence truly emerges through the synergy of human ingenuity and technological advancement and provide equal access to anyone who wants it with clear transparency and governance.

V.2.2 AI and humans

In this part, we delve deeper into the human-centered aspect of the Olympic Games shifting our focus to athletes, referees and coaches.

V.2.2.1 “Robot” Athletes

Let us consider the following scenario: imagine a future iteration of the Olympic Games in which AI-powered exoskeletons that enhance strength and speed or bio-enhancements that optimize physiological functions are widely available. Athletes can choose to augment their bodies and their abilities beyond any natural limits. Imagine a world where nanotechnologies rewire brain pathways, allow optimum recovery, completely prevent injuries, and block the negative effects of stress.

In that case, what happens to human agency especially if an athlete's performance becomes completely reliant on Artificial Intelligence?

What about fairness and accessibility which are fundamental for the Games? Is it still a competition between humans or between the best new emerging technologies?

Does the spirit of sportsmanship become irrelevant as it no longer emphasizes effort and dedication but follows strict protocols and has the means to procure the latest technologies? In this case, does not the definition of “human capability” become obsolete?

If technology can compensate and surpass any physical shortcomings, does the playing field become leveled in a way that diminishes the value of personal struggle and perseverance?

Does the pursuit of excellence simply take a new form, where mastering the connection between humans and AI becomes the new golden standard for performance?

Conclusion:

In this case, we can assume that leaving AI unchecked would compromise human agency, sportsmanship, and fairness, transforming the very essence of the Games into a technological race rather than the celebration of human achievement. As we understood in our Literature Review, the Olympics ideal rest on the idea of the Human potential, of overcoming limits and obstacles through effort, discipline, and perseverance with a limit on what technological advancements are allowed or banned. If AI becomes the driving factor in performance, we risk losing the authenticity of the Olympic Movement. In that case, who would determine what “human” truly means?

On the other hand, if there is a way to ensure, through policies and transparent governance, that AI is only used as a tool to enhance rather than replace human capabilities and create healthier

athletes, we can retain the integrity of the Games. By prioritizing transparency, equitable access, and the preservation of Human agency, AI could enhance rather than undermine those values the Olympic Movement strives to uphold.

V.2.2.2 AI refereeing

With the latest developments in Artificial Intelligence, it is now easy to imagine the Olympic Games in which all refereeing and judging is conducted by intelligent machines. Different programs analyze with perfect accuracy all movements, errors, and scores, virtually eliminating the bias a human referee could have. Imagine an AI that possesses unparalleled accuracy and ensures perfectly objective judgments for all events. On the surface, this scenario follows Olympism's principle of fairness in sports.

But does removing human judgment from the Games eliminate the possibility of unpredictable outcomes and “human” errors? The same human errors that preserves the unpredictability, emotional resonance, interpretative nuance, and authentic that make the Olympic Games compelling and deeply human?

What would happen in the case AI malfunctions or makes an error? How could accountability be addressed? With the lack of human referees to explain or defend decisions could it create a sense of injustice and erode the integrity of the competition?

Could the over-reliance on AI erode the foundations of trust and result in reduced emotional engagement for the spectators? What if spectators and athletes lack faith in the judgment AI makes? Could it diminish the legitimacy of the Olympics and lead to widespread skepticism?

If we removed the “human element” that often makes sports captivating, the close calls and subjective interpretations of complex moves, the controversy of mistakes, and the emotional responses of athletes on calls they would deem unfair could the Olympics become sterile, predictable, and overall lack the emotional resonance of human-mediated events?

We have already seen the challenges of accepting Virtual Assistant Referees in some sports. Is it possible to even imagine an event with no humans to supervise unreliable AI machines?

Conclusion:

This scenario challenges us to consider the delicate balance between objectivity and the human element in sports. It forces us to question whether the pursuit of absolute objectivity and fairness comes at the cost of the main qualities that make the Olympic Games a worldwide spectacle of human endeavor.

The Olympic Movement aims to unite people through shared values. Values that over-reliance on AI could unintentionally be undermined by shifting the focus away from human connections and achievements. Left unregulated Artificial intelligence could compromise fairness, especially if the decisions taken by the machines lack transparency or fail to understand the nuances in human performance and effort. Sidelining the human element for the pursuit of objectivity could undermine the very essence of the Olympic spirit.

This is why in this scenario Artificial Intelligence should be strictly regulated. We must find a balance between technological advancements and prowess with the preservation of human-centered traditions. This balance lies in using AI as a tool to enhance fairness, accuracy, and transparency in human decisions, but not completely replacing one of the core actors that make the Olympic Games what they are today.

V.2.2.3 AI coaching

In our final scenario, we will imagine Artificial Intelligence as a commonplace in which Athletes source their personalized training programs, strategies, and techniques based on vast data analysis. In this thought experiment, AI has become a ubiquitous technology in the Olympic landscape. It is a digital mentor for athletes analyzing the best athletic performances, physiological data, strategic insight, and crafting tailored training programs for optimal efficiency. It analyzes opponents' actions and patterns, their weaknesses and strengths, and devises winning strategies with precision.

While AI promises to unlock new levels of athletic potential, pushing athletes to break records and be the best versions of themselves, we must consider the potential consequences of such innovations.

How can we ensure equitable access to this technology if only well-funded nations and athletes can afford these advanced tools? Wouldn't it create an even wider gap between athletes undermining the spirit of fair competition that lies at the heart of the Olympic Games?

Does the rise of AI coaches diminish the role of human coaches? Does it erode the mentorship, inspiration, emotional support, and bond of trust that transcends the athlete-coach relationship? Can AI understand the human touch that motivates athletes to push their boundaries, overcome challenges and adversity, and sacrifice many aspects of social life to become the best athletes they can be?

Could AI-driven training protocols lead to a homogenization of techniques and strategies? Would all athletes follow the same training, same routines, same diets, which would lead to a decline in diversity and innovation? Will the unique styles and creative approaches that often allow athletes to distinguish themselves become mundane or even banned if too effective?

Conclusion:

These questions let us consider the multifaceted role of a coach in athletic development.

While AI offers tools for performance enhancement as well as healthier athletes diminishing the risks of injuries, it also risks overshadowing the human qualities that inspire, motivate, and nurture athletic talent. Integration of AI as digital mentors' risks enhancing inequalities between nations and athletes, allowing some to gain an unfair advantage over others, therefore widening the performance gap between well-funded athletes and those from less privileged backgrounds undermining the principle of fairness which is a cornerstone of the Olympic Movement. It would threaten to erode the spirit of equal opportunity and inclusivity which is at the heart of Olympism. Also, while AI coaching would offer precision, performance, and new records, it could diminish the irreplaceable role of human coaches as mentors who are not only there to train athletes but also to give them emotional support, offer them trust, and be a mentor throughout aspects of life that surpass solely training. Furthermore, the widespread adoption of AI training protocols could lead to standardization techniques and strategies that risk stifling creativity, innovation, and diversity of styles.

The Olympic Games are not merely a showcase of physical and technical excellence. They are a celebration of the humanity of athletes. This is the reason it is difficult to find a balance between integrating AI as a valuable tool while preserving the irreplaceable human element in coaching and ensuring that the pursuit of excellence remains accessible to all regardless of background and financial resources.

Chapter VI: Results of the Symbiosis of AI and Olympism

VI.1. The Potential Benefits of AI in the Olympic Movement

Throughout this study we have come to an understanding of the benefits and significant advantages that Artificial Intelligence (AI) could bring to the Olympic Movement while remaining deeply aligned with its core values. Furthermore, our findings reveal that AI could function as a catalyst for global connectivity and facilitate unity among athletes from all over the world. The implications arising from our research indicate that the incorporation of AI may not only improve the operational efficacy of the Olympic Movement but also further its mission to champion inclusivity and foster shared experiences among diverse cultural groups.

Promoting Global Connection and Unity: Artificial Intelligence could serve as a crucial function in promoting cultural exchange and enhancing international unity. By facilitating instantaneous multilingual translation, creating tailored interactions, and comprehensive accessibility to various events, AI can uphold and embody the Olympic principles of camaraderie and respect. Through these advanced technologies, we can establish a framework through which the Olympic Movement effectively transcends linguistic and cultural divides.

AI as a Catalyst for Excellence: The incorporation of artificial intelligence can also significantly enhance athletic performance by providing data-driven insights into training protocols, strategic decision-making, as well as recovery methods. By customizing training programs to meet the specific requirements of individual athletes, AI can closely adhere to the Olympic principle of excellence, thereby enabling athletes to reach their utmost potential while upholding the ideals of fairness and integrity.

Enhancing Inclusivity through AI: Artificial intelligence-powered tools, including adaptive viewing technologies and assistive devices, could play a crucial role in promoting accessibility for individuals with disabilities. These advancements significantly contribute to inclusivity in both active participation and the spectator experience, thereby reinforcing the Olympic Games' dedication to the principles of universal human rights.

Improved Athlete Performance and Health: Artificial intelligence could also be used through wearable technologies, biometric data, and predictive analytics that monitor and forecast injury risks in athletes. These technological advancements can significantly enhance training safety and promote the long-term health and welfare of athletes. This approach is consistent with the Olympic Movement's commitment to comprehensive athlete development, emphasizing not only performance but also overall well-being creating healthier individuals that can thrive not only in sports but also in society.

An improved viewing experience: Artificial intelligence is fundamentally transforming the landscape of event production. We also concluded in three. AI can provide a better viewing experience for people with disabilities, but it can also provide an overall enhancement in the spectator's experience by providing advanced visual enhancements, delivering real-time statistical analysis, and facilitating predictive evaluations of competitive outcomes. This window of possibilities could also facilitate the creation of a dynamic and immersive experience for audiences, thereby significantly elevating the entertainment value associated with the Games.

Fair Scoring and Judging: Artificial Intelligence (AI) could enhance objectivity in scoring and officiating through the mitigation of human error and attenuation of biases. By employing algorithms and advanced computer vision technologies, AI will potentially promote transparency and fortify the overall integrity of competitive events.

Optimized Event Management and Security: Artificial intelligence could improve logistical planning, crowd management, and overall security by employing predictive modeling and conducting real-time data analysis potentially facilitating the seamless execution of events, all the while prioritizing the safety of both participants and spectators.

Anti-Doping Efforts: Artificial Intelligence (AI) can also play a pivotal role in the optimization of anti-doping strategies through the meticulous analysis of Athlete Biological Passport (ABP) data. Through the identification of patterns that could be indicative of doping behavior, AI can provide a more robust framework for detecting potential violations. These advanced

methodologies would significantly augment the credibility and equity of anti-doping initiatives, thereby safeguarding the integrity of competitions.

Sustainability and Legacy: It is important to note that Artificial Intelligence could also play a pivotal role in promoting sustainable practices by facilitating resource allocation, reducing ecological footprints of stakeholders, and facilitating data-informed decision-making for host cities. These advancements are instrumental in guaranteeing that the Games yield a beneficial and enduring legacy.

VI.2 Risks of AI left unchecked

Although the advantages of artificial intelligence are considerable, our research delineates critical risks linked to its unregulated application. There are risks and significant ethical challenges that are accompanied by AI even more if left unregulated. Fairness, human connection, unity, and world peace could all be at risk if something concrete is not done to regulate AI and allow transparent governance with open data.

Erosion of Fairness: The uneven availability of artificial intelligence resources has the potential to amplify existing inequalities among athletes and nations, thereby threatening the foundational principle of fair competition and fair play. If left as is, such disparities will pose significant challenges to the ideals of inclusivity and fairness that are integral to the philosophy of Olympism.

Increase of Inequality: Athletes and nations with constrained financial resources would encounter significant obstacles in accessing innovative AI technologies if there are no imposed accessibility measures and policies, thereby creating a bigger disparity between well-funded athletic programs and their less privileged counterparts than already exists. This would pose a substantial threat to the inclusivity principles foundational to the integrity of the Games.

Loss of Human Agency: An excessive dependence on artificial intelligence may lead to the marginalization of human judgment within decision-making frameworks. From athletes to coaches, referees, and spectators, from governments, International Federations, and the IOC, the loss of the inherently human-centric essence of the Olympic Movement through dependence on AI would have dire consequences on the core values Olympism strives for.

Decline of Sportsmanship: Furthermore, the pursuit of hyper-efficiency facilitated by artificial intelligence could prioritize outcomes, potentially compromising the core values of integrity, respect, and fair play. This paradigm shifts risks undermining the essential tenets of sportsmanship and ethical competition, thereby challenging the foundational principles that govern equitable engagement in athletic endeavors.

Compromised Ethics and Integrity: If there is an unregulated application of artificial intelligence, it could facilitate unethical practices, exemplified by the phenomenon we call "AI doping," through which athletes may leverage intelligent technologies to gain illegitimate advantages. This would pose a significant risk to the integrity and credibility of the Olympic Games as well as other sporting events, necessitating continuous oversight, and regulation to mitigate the potential unethical use of technology and preserve the principles of fair competition.

Integrity and Doping Concerns: Artificial intelligence has the potential to introduce new levels of performance enhancement that may call into question the efficacy of existing anti-doping regulations. Such developments underscore the imperative for ongoing adaptation of regulatory frameworks to ensure the preservation of competitive integrity.

“Robot Athletes” and a Dehumanization of Sport: In the same context as the loss of human agency, a prevailing focus on AI-driven optimization in sports might inadvertently lead to a dehumanization of the athletic experience, as it tends to prioritize efficiency over the nuanced emotional and cultural dimensions that are intrinsic to sporting events. Such an approach could also pose a significant risk of undermining the fundamental values that imbue athletic performance with profundity and inspiration.

Less Human Connection and Experience: Through an increased dependency on AI-mediated interactions, interpersonal relationships among athletes, coaches, and fans could face a significant threat to their integrity. The possible degradation of human connection has the potential to undermine the emotional depth and collective experiences that are essential to the Olympic Games.

VI.3 Balancing Benefits and Risks:

The previous results highlight the substantial capabilities of artificial intelligence to enrich the Olympic Movement, while simultaneously exposing critical ethical, social, and practical dilemmas. To fully capitalize on the advantages of AI, while also upholding the core tenets of Olympism, this study underscores the necessity for:

- **Robust governance frameworks** that prioritize ethical oversight and transparency.
- **Equitable access policies** to minimize **disparities and foster inclusivity**.
- A commitment to **preserving the humanistic values central to the Olympic spirit**.
- A clear view of the **objectives and outcomes** expected using AI, aligning with Olympic Values and the goal to make the world a better place.

By confronting these challenges, the Olympic Movement has the potential to effectively incorporate Artificial Intelligence technologies, thereby guaranteeing that innovation would function as a mechanism to promote fairness, respect, and excellence within the framework of the Games minimizing the risks and potential unfavorable outcomes.

Chapter VII: Conclusions and Recommendations for Future Research

VII.1 Conclusions

This study argues that artificial intelligence can serve as a transformative force within the Olympic Movement, contingent upon its thoughtful integration with ethical considerations. AI's ability to enhance inclusivity, improve athletic performance, and further sustainability efforts aligns closely with the core values of fairness, respect, and excellence inherent in the Olympic spirit. However, the unchecked deployment of AI technology poses a significant threat to these vital principles, potentially undermining the integrity and authenticity of the Olympic Games.

The findings reaffirm the importance of:

- **Ethical oversight:** Establishing robust frameworks that ensure transparency and accountability in AI deployment.

- **Equitable access:** Promoting policies to minimize disparities in AI availability among nations and athletes.
- **Human-centric implementation:** Preserving the emotional and cultural dimensions of sport to maintain the Olympic spirit.

VII.2 Recommendations for Future Research

This research paves the way for a deeper exploration of the ethical, social, and practical ramifications of artificial intelligence within the context of the Olympic Movement. Subsequent studies ought to focus on:

Equitable Governance: In what ways can international policies be structured to guarantee that athletes from various socio-economic backgrounds have fair and equal access to artificial intelligence technologies?

Enhancing transparency in AI systems is essential for improving the explainability and accountability of AI decision-making, particularly in the contexts of officiating and training. Various mechanisms can be implemented to achieve this goal. For instance, incorporating interpretable models can allow stakeholders to better understand the underlying processes that lead to AI-generated decisions. Additionally, establishing protocols for providing clear documentation of the algorithms and data used can further demystify AI operations. Furthermore, integrating user-friendly interfaces can facilitate more intuitive interactions with AI systems, enabling users to grasp complex insights more effectively. Lastly, fostering a culture of continuous feedback and iterative improvement can ensure that AI systems evolve in response to user experiences and ethical considerations, reinforcing trust and accountability in AI applications.

Cultural Diversity in AI: In what ways can artificial intelligence preserve and foster the rich diversity of techniques, styles, and traditions inherent in Olympic sports?

Collaborative AI-Human Models: Which frameworks can achieve a balance between optimizing artificial intelligence and maintaining the integrity of human mentorship and agency within the realm of sports?

Ethical AI in Emerging Technologies: In what ways can forthcoming innovations in artificial intelligence be harmonized with the Olympic principles of respect, fairness, and excellence?

These recommendations would use the new European Union AI Act implemented by the European Parliament and the Council of the 13th of June 2024 (that aims to ensure that AI is used safely, ethically, and transparently, through a categorization of AI systems into different risk levels, imposing stricter requirements for higher-risk applications, such as biometric identification or critical infrastructure.) as a steppingstone for deeper exploration of the ethical, social, and practical ramifications of artificial intelligence in the Olympic Movement.

Through the exploration of these topics, in-depth analysis and investigations can provide invaluable insights into the Olympic Movement as it adapts to the shifting dynamics of artificial intelligence. This will ensure that technological advancements function as instruments of unity, inclusivity, and the celebration of human capabilities ultimately aiming to make the world a better place.

Chapter VIII: End Matter

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