

Title: Sporting Mega-Events, Physical Activity, and Actor Network Theory:
Mapping Actants of Movement at the 2023 FIFA Women's World Cup

Abstract: This paper explores the potential of Bruno Latour's Actor Network Theory (ANT) for rethinking the relationship between sporting mega-events and physical activity (PA). Engaging with ANT as theory and methodology, we explore how PA is a result of human-nonhuman interactions occurring during and around sporting events. More specifically, based upon a collaborative ethnography of the 2023 FIFA Women's World Cup (FWWC23), we focus on humans and nonhumans (football, physical spaces, seats) as actants (intermediaries and mediators) that enabled and/or constrained PA. In so doing, we provide an alternative to PA initiatives (such as the collaboration between FIFA and WHO with the BeActive #BringtheMoves campaign at the FWWC23) that focus on human intentionality and view the body as controllable. Instead, in this paper we recognize PA as a complex phenomenon dis/re/assembling as objects, humans, and actants interact in (un)expected ways. Simultaneously, we discuss both the affordances and challenges offered by ANT in sporting mega-event literature and for research and policies that link sporting events and physical activity.

Keywords: Actor Network Theory, Physical activity, mega-events, FIFA World Cup, promotional campaigns

Introduction

The stadium is alive with chatter and excitement; players warming up on the field, people waiting in line for their pre-game goodies, fans wandering around looking up and down trying to find their seat. A video begins to play on the jumbotron featuring clips of dancing, juggling footballs, and FIFA teams and players celebrating scoring goals all to the beat of “I like to move it.” The clips fade out and written across the screen is “#BringtheMoves, Kids need to be active every day for 60 minutes.” The fans barely register the video is even playing. But seconds later, a booming voice erupts over the stadium: “Get Up fans, it’s time to bring the moves” and instead of a pre-packaged video on the screen, there are images of fans moving and dancing. There’s an immediate shift in energy, fans begin to jump and scream wildly in efforts of attracting the camera’s attention.

Prior to the start of the 2022 FIFA Men’s World Cup, the Fédération Internationale de Football Association (FIFA) – the international governing body for football – partnered with the World Health Organization (WHO) to develop the Be Active #BringTheMoves campaign. While heavily featured during the 2022 World Cup, the campaign continued into the 2023 FIFA Women’s World Cup (FWWC23) (FIFA, 2023a) encouraging fans to be physically active. According to the FIFA president, Gianni Infantino, the campaign uses the World Cup to “send the message that we all need to be active and drives awareness also for parents that children need 60 minutes of physical exercise a day” (FIFA, 2022).

Be Active #BringtheMoves is an example of the growing trend of using sporting mega-events to increase populations’ physical activity (PA) through campaigns and policies. In 2022, the *Playing the Long Game* report was launched at the World Innovation Summit for Health (WISH) held in Qatar where WISH partners and the World Health Organization (WHO) came together to encourage event organizers to better utilize sporting mega-events to increase PA and improve health and wellbeing (WHO, 2022). The report provided event organizers and stakeholders with a framework and suggestions for promoting health and PA across mega-events using the FIFA Men’s World Cup 2022 as a case study. Similarly in June of 2023, the International Olympic Committee partnered with WHO to launch the Let’s Move Campaign,

celebrated on Olympic Day on June 23. On the 23rd, the IOC and partner organizations arranged for over 131 mass participation events and digital activations to get people active. As WHO director-general, Dr. Tedros Adhanom Ghebreyesus, stated, “The Olympic Movement has a unique ability to harness the power of increased physical activity through sport for improving public health” (IOC, 2023).

While efforts to improve PA should be applauded, many scholars have pointed to the inefficacy of such campaigns, policies, and PA legacies, suggesting sporting mega-events do not directly affect or increase PA participation rates (Bauman et al., 2015; Bretherton et al., 2016; Potwarka and Leatherdale, 2016). Rather such campaigns and the focus on increasing PA have been critiqued, with various scholars describing such efforts as a means of justifying the exorbitant cost of hosting and running sporting mega-events in which ideas around PA become “more rhetoric than reality” (Bauman et al., 2015: 243; Grix et al., 2017; Thomson et al., 2021).

In this paper, we build upon and extend this critical scholarship of such campaigns. Rather than questioning the efficiency and quantifiable outcomes promised by campaign organizers, we explore the potential of using Bruno Latour’s Actor Network Theory to think differently about how PA is conceptualized in relation to mega-events. Often in programs created around sporting events, PA is seen as a premeditative movement initiated by human intentionality. Put simply, the underpinning assumption is that a ‘good’ campaign can and will activate, inspire, and motivate humans to participate in more physical activity. However, engaging with ANT encourages us to explore how movement occurs (or fails to arise) as a result of human-nonhuman interactions during and around sporting mega-events. More specifically, we use the 2023 FIFA Women’s World Cup as a case study to map and conceptualize PA as a heterogenous network emerging as a result of various interactions between humans and

nonhumans, specifically by focusing on nonhuman actants: footballs, physical spaces, and the seat. Therefore, in this paper we explore different ways of reconceptualizing physical activity, while simultaneously ‘experimenting’ with the utility of ANT for mega-event scholarship.

Literature Review

A common theme within scholarship on sporting mega-events is to evaluate claims and promises made by stake-holding organizations about the ability of the event to increase participation levels in specific sports and in the overall PA of the population (Annear et al., 2022; Brown and Pappous, 2021; Mahtani et al., 2013; Murphy and Bauman, 2007). In particular, much of this has examined the ‘trickle-down effect’ or ‘inspiration effect’ whereby participation levels are expected to increase as a result of fans and viewers becoming ‘inspired’ by the athletes and from the exciting atmosphere of the tournaments (Ramchandani et al., 2014; Weed et al., 2015; Ishigami, 2019). For example, Ishigami (2019) focuses on the 2011 FIFA Women’s World Cup to explore the impact the tournament might have on sports participation amongst Japanese adolescent girls. Ishigami (2019) was particularly interested in how the success of the Japanese national team (winners of the tournament) and athlete role-modelling would influence and increase the number of girls ages 13-15 playing soccer in the country. Ultimately, the author found that there was not a causal or influential relationship between the Japanese team’s victory and the number of girls participating in the sport, concluding that this was because the Japanese team members’ achievements were unattainable and not related to the everyday experiences of girls in Japan. Such findings are mirrored across much of the research around PA legacies of mega-events which shows little to no increase in physical participation in the host countries, despite promises made by the bidding and organizing committees.

Within this scholarship, there has been some research focused specifically on PA campaigns, programs, or policies developed as part of the PA legacy expectations from sporting mega-events (Bretherton et al., 2016; Craig and Bauman, 2014). For example, Craig and Bauman (2014) explore the impact of the 2010 Vancouver Winter Olympics and the affiliated campaigns ActNowBC and SOGO Active on increasing PA levels in British Columbia. Both campaigns were launched prior to the Games with ActNowBC targeting both adults and children, while SOGO Active primarily focused on youth involvement, helping youth access facilities, equipment, and funding. Despite the enthusiasm and interest surrounding the programs and the Games, the authors note that there was no clear increase in PA or sport participation in the region. Looking towards policies within PA legacies, Bretherton et al. (2016) analyzed the failed efforts of the UK government to get more people physically active prior to the 2012 London Olympics. In the four years (2008-2012) leading up to the Games, the UK government set out a goal of seeing two million people more active by 2012, but in 2011 abandoned all efforts. The authors attribute the failed efforts to the over-reliance of the government on the ‘inspiration effect’ to motivate people to exercise, in addition to the political and cultural climate of the country leading up to the Games that was not taken into consideration when developing the policy.

While many scholars have critiqued the ‘inspiration effect’ and blamed the failure of such campaigns on other factors, a growing body of literature is taking different approaches to think about how PA is understood in such policies and in different sport/leisure spaces (Piggins, 2020; Matias and Piggini, 2022; Budzynski-Seymour et al., 2022). For example, Piggins (2020) describes how within education and policy settings (including WHO), PA is most often understood as skeletal muscle movement with a desired outcome of energy expenditure which

can be quantified. Instead, he argues that a much broader understanding of PA is needed, redefining PA as involving “people moving, acting and performing within culturally specific spaces and contexts, and influenced by a unique array of interests, emotions, ideas, instructions and relationships” (p. 5). Importantly, he describes how this definition can be useful for policy makers to see PA as more than simply a form of disease prevention and through a medical lens. Similarly, Budzynski-Seymour et al. (2022) build upon Piggins (2020) definition of physical activity and utilize the concept of the ‘experience economy’ to reimagine PA as a ‘physically active experience’ when working with children. They propose a series of steps (Esthetics, Escapist, Educate, Entertain) that take into consideration the affective and ecological influences of children’s physical activity and focus more on the *experience* of physical activity. While such research is attempting to expand and broaden understandings of PA, they still focus primarily on the in/active human body, and human intentionality without taking into account the agentic capacities of the surrounding material objects. Despite decades of policy and research, the connections between mega-events and physical activity remain tenuous and mostly ineffective. Therefore, in this paper we explore an alternative approach to physical activity and mega-events, drawing upon Actor Network Theory to map the more-than-human networks of moving bodies.

Actor Network Theory as an Ontological Approach

Actor Network Theory was developed in the late 1980s and is most often associated with the work of Bruno Latour in conjunction with John Law and Michel Callon who were interested in examining the processes of producing scientific knowledge (Cressman, 2009; Kerr, 2016). In his writings on the development of ANT, Latour (2005) discusses how he wanted to interrogate the idea of the social, seeing society not as a stable, fixed domain that can be studied, but rather as

something that is always emerging and changing. Within ANT, a society is understood as “having fibrous, thread-like, wiry, stringy, ropy, capillary character” (Latour, 1996: 370) that is not created apriori, but constantly developing through a network of heterogeneous elements. Hence, in this approach the focus is less “on the world as somehow already made, and more on the process of its construction, stability, or ‘becoming’” (Darnell et al., 2018: 91). Within our research, this meant focusing less on the already established and intentional forms of PA present at the mega-events (players on the field, dance zones, BeActive campaign videos) and instead mapping the human and more-than-human actants impacting moving bodies during the tournament.

Although there are other approaches that map the production of technology and social phenomena (e.g. social construction of technology), ANT differs in its emphasis on both human and nonhuman interactions within the networks. ANT’s generalized principle of symmetry describes how humans and nonhumans should be treated equally when examining how networks are formed and are equal in their contribution to worldly phenomena (Latour, 1993). Therefore, within ANT, focus expands beyond the human to where actants “can literally be anything provided it is granted to the source of an action” (Latour, 1996: 373). Importantly, the focus on the nonhuman does not suggest that the nonhuman is anthropomorphized or that nonhumans configure the human world independently, but rather scholars must take into account the impact of nonhuman actants as they *interact* with the human. Latour (2005) describes how within such networks, objects can often act as either mediators or intermediaries. An intermediary is an actant that “transports meaning or force without transformation” (p. 39) whereas mediators “transform, translate, distort, and modify the meaning or the elements they are supposed to carry” (p. 39). Kerr (2016) provides a simple example to clearly illustrate such concepts

discussing how when a stopwatch accurately records an athlete's time, it is considered an intermediary as it acts in a predictable manner. However, if the stopwatch stops working, it operates as a mediator in that its outcome is not assured. Thinking through objects' roles as mediators and intermediaries provides a lens for recognizing the powerful impact nonhuman actants can have on human movement. Thus, within ANT, agency and power are not located in a singular source (i.e., a leader, or powerful group of humans, a policy document, or physical activity campaign) but develop through human and nonhuman networks.

Interested in mapping such networks, ANT has been considered both a theory and method. As Law (2009: 141) describes it, ANT is a “disparate family of material-semiotic tools, sensibilities and methods of analysis that treat everything in the social and natural worlds as continuously generated effects of the webs of relations within which they are located.” It allows for one to theoretically explore the role of networks coming together and the impact of such networks, while simultaneously guiding scholars methodologically to:

follow the actors themselves, that is try to catch up with their often wild innovations in order to learn from them what the collective existence has become in their hands, which methods they have elaborated to make it fit together, which accounts could best define the new associations that they have been forced to establish. (Latour, 2005: 12)

Within sport and physical cultural scholarship, ANT has been used to think about networks that develop during specific sporting activities, such as in gymnastics (Kerr, 2014; Kerr and Obel, 2018), skateboarding (Geckle, 2021), ballet (Markula, 2021), and Tough Mudder races (Weedon, 2015). This literature primarily focuses on the ways in which humans and nonhumans come together to co-produce sport as social phenomenon. In his analysis of the Tough Mudder outdoor obstacle course, Weedon (2015: 434) uses ANT to reconceptualize camaraderie (a renowned principle of Tough Mudders) and the entire obstacle race experience itself as a “more profoundly shared [understanding], one in which a whole host of objects, affects, and competencies, human

and otherwise, make dramatic and subtle contributions.” Others have drawn upon ANT to map the various human and nonhuman actants in Sport for Development and Peace (SDP) assemblages (Darnell, 2020; Darnell et al., 2018; McSweeney et al., 2020).

Importantly for this paper, literature has focused on using ANT to explore mega-events in varying ways (Dawson and Jöns, 2018; Müller, 2014; Presti et al., 2022; Wheaton and Thorpe, 2021). In particular, scholars have been drawn to ANT to analyze the Olympics, specifically focusing on nonhuman actants and the role of objects on both humans’ experiences of the Games and event legacies (Presti et al., 2022; Dawson and Jöns, 2018). For example, Dawson and Jöns (2018) showcase the potential of using ANT, in conjunction with Preuss’ (2007) legacy cube and other mega-event legacy theories (MELT), to understand the legacies of the Queen Elizabeth Olympic Park during and following the London 2012 Olympic Games. In particular, they utilize ANT’s ideas around relational effects, agency, and understandings of actants to develop a multidimensional concept of legacy which incorporates a range of human, nonhuman, and intangible effects that arise and work together to produce impacts after a mega-event. In discussing the utility of this approach, they write, “ANT’s greatest achievement has most likely been to draw attention to the ways in which material objects, resources and infrastructures have shaped human interactions and contributed to both the stabilization of social structures and the channeling of human practices” (Dawson and Jöns, 2018: 50). In this paper, we build on this ANT scholarship by exploring its potential and utility for thinking about physical activity at sporting mega-events. In so doing, we contribute to ANT’s continuous evolution, recognizing how scholars and Latour himself, continue to clarify, modify, and advance the theory across social sciences literature through a range of interpretations and applications.

Methodology

As both theory and methodology, ANT encourages scholars to explore how both human and nonhuman actants develop into networks that give rise to social phenomena. Often this is accomplished through ethnographic approaches, which has become so popular within ANT research that it has become known as the “natural method of choice” (Nimmo, 2011: 112). In part, ethnography has been attractive to many ANT scholars because it allows for flexibility for the researcher to ‘follow the action’ within and across spaces and places, exploring how human and nonhuman actants—objects, environments, ideas, language—are “inextricably intertwined within practices” (Nimmo, 2011: 113).

In this research project, we adopted a collaborative ethnography in Aotearoa New Zealand during the 2023 FIFA Women’s World Cup, engaging in a range of participant-observations during the tournament. An American in Aotearoa New Zealand for the event, the first author immersed herself in the FWWC23 experience; attending games, visiting fan zones, speaking with fans and meeting with other researchers. In total, she attended nine different games during the Group Stage of the World Cup, in the four host cities of Aotearoa New Zealand (three games in Auckland, two in Hamilton, two in Wellington, and two in Dunedin) seeing a total of twelve different teams. She also attended the FIFA Fan Festivals™ in each of the four cities. FIFA Fan Festivals™ were specific sites set up in each of the host cities with live entertainment, food/drinks, games, presentations, entertainment, and showings of the games where fans could come to congregate and celebrate the FWWC23 (FIFA, 2023b). While interested in the BeActive #BringtheMoves campaign and the movement of bodies, she entered into these spaces with openness and uncertainty, curious at the ways in which particular actants would make themselves known and at the ways in which humans/nonhumans worked together to

produce the events and festivals. To document such actants, she made observations at the events, often arriving early to the stadiums and Fan Festivals, spending time wandering around the entire venue, noting both the humans and nonhumans present in such spaces and documenting their interactions. She recorded her observations through photographs and field notes taken in such spaces, that were later elaborated on and expanded upon in written reflections.

A New Zealander living in a remote region of the North Island, the second author's ethnographic approach included observations across a range of spaces and places. She followed the marketing and promotion of the tournament, tracing its various actants as they interacted with her everyday life, as a feminist scholar working with various national and regional sports organizations, as a mother of two young children who play soccer, as the partner of a soccer coach, and as a fan of the women's game. She attended one event in Auckland with her partner and two PhD students, and then watched more than 10 games at home with family and friends in a small city roughly a six-hour drive from any of the venues where the games were being played. Before, during, and after the tournament, she paid attention to the many conversations at school, in the home, on the sidelines, and in local shops. She attended to how the regional football association was promoting the tournament and the women's game at local events, as well as national and regional media coverage on the tournament, and how the local school children were being activated at different stages of the tournament by watching games at home with their families. In this way, she was following the action as it occurred in an array of everyday social settings. Throughout the event, the two authors were in regular communication, sharing notes, ideas, photos, and reflections from their differing experiences and observations of the tournament.

During this time, analysis was occurring alongside ‘data collection.’ Within ethnography, the research ‘stages’ such as data collection, analysis, and writing are inextricably linked and can occur simultaneously (O'Reilly, 2012). Therefore, such discussions between the authors could be considered a form of analysis where ANT guided their thought process and how they were understanding and making sense of both of their experiences and observations, and the various actants as they followed them during the tournament. The writing below is informed by discussions, thoughts, and experiences the authors had while attending and observing the FIFA World Cup 2023. It was their experiences observing and being critical sport scholars and fans of the tournament, and their engagement with ANT, which inspired the rethinking of physical activity and sporting mega-events.

In addition to their collaborative analysis of actants during the tournament, the authors also engaged in the process of creative writing and visual montage to capture and represent some of the human and nonhuman aspects of the PA networks they were mapping. Across ethnographic research, scholars have often drawn upon more creative forms of representation, such as poetry, autoethnographic and creating writing, and photography. Such approaches allow scholars to “animate rather than simply mimic, to rupture rather than merely account, to evoke rather than just report” (Vannini, 2015: 318). For this research, we include a selection of short vignettes and visual montages to complement the ANT analysis, focusing on how both humans and nonhumans are agentic and affective in the networks of physical activity. Such creative modes of representation enabled the authors to animate the nonhuman actants without succumbing to anthropomorphizing them, a common critique of ANT (Elder-Vass, 2008).

Mega-Events and Physical Activity Networks: Following the Actants

For this paper, PA is not a stabilized ‘thing’ that can be activated only by movement campaigns, such as BeActive #BringtheMoves, but rather an effect of a range of actants, humans/nonhumans. Within this case study of the FWWC23, the analysis revealed a range of actants moving bodies in expected and unexpected ways; chairs, roads, buses, homes, footballs, players, siblings, friends, school yards, tv, phones, BeActive campaign, and promotional videos. While all of these are important in varying ways, ANT does not require scholars to detail every single human and nonhuman that is present in such networks. As Latour (1996: 378) describes, ANT is “not about *traced* networks, but about a network-*tracing* activity.” During the authors’ ethnographic observations and experiences of the World Cup, they traced a range of human and nonhuman actants. The discussion below focuses on footballs, the stadiums, and seats. In choosing these objects, we do not suggest they are the most important or significant within physical activity networks. Rather these were the objects that were the most pronounced within our auto-ethnography and continuously captured our attention as we attended the games and engaged in subsequent discussion and analysis. They should be seen as examples of the ways in which objects, that are often overlooked and ignored, can also be agentic in the production of physical in/activity at mega-sporting events.

Footballs in the Physical Activity Networks

Many would recognize the critical role of the ball in a football match for without it, the game cannot be played. However, often the ball is understood only as active when it interacts with the human body. It is often considered an inanimate object that is manipulated, kicked, and controlled by players. ANT asks scholars to rethink the role of the football and its part in a larger

network. Within a network, Latour (1996: 379) emphasizes that it is crucial to think about “what circulates and what makes the circulation be both co-determined and transformed” looking at how both humans and nonhumans form a productive network, as well as how such nonhumans act as both intermediaries and mediators. Therefore, an ANT perspective requires a more critical and deeper analysis of the football beyond its role on the field, exploring how the football transforms and impacts the other humans and nonhumans it interacts with.

At the 2023 FIFA Women’s World Cup, there was the ‘main’ ball (the one on the field itself) that was central to the physical activity occurring on the field of play. On the field, there were both humans and nonhumans that became part of the physical activity network: players, refs, grass, nets, sweat, boots, socks and shorts, all impacting how physical activity was performed. While this network is important and an entire analysis could be devoted to the ball’s role in movement patterns on the field, here we look towards the physical activity off the field where the football also played an active role.

For fans, the football interacts with them and other nonhumans to create various networks and intensities of physical activity. During the FWWC23, in the Round of 16, one of the most epic moments happened in which the Swedish National Team beat the United States, the reigning FIFA World Cup champions, in a penalty shoot-out. While there were multiple shoot-outs throughout the tournament, this one was one of the most dramatic. In the final moments of the shoot-out, Lina Hurtig from Sweden came up and kicked the possible winning goal. US goalkeeper, Alyssa Naeher, got a hand on the ball, sending it up in the air. As it came back down, Naeher scrambled to push it out of the goal. For minutes, no one was sure if the goal was actually saved as rules state that if the bar crosses the goal line at any point, it’s a goal. Replays ensued all while Naeher shook her finger saying no goal and was later quoted saying “I will go to

my grave claiming that I saved it. You can't convince me otherwise." Eventually the shot was ruled a goal. In this moment, the ball became part of multiple fan's physical activity networks. For Swedish fans, bodies erupted in joy, cheering and jumping, running round the house or stadium. The ball, nationalism, bodies, joy, and excitement interacted and formed this spontaneous network of PA. However, for American fans, the ball interacted with slumped bodies and sadness and disappointment to inhibit physical activity. Bodies felt heavy, deflated, and lost. Yet, importantly, the ball played a powerful role in both of these physical activity networks, and particularly because in that penalty kick shootout, it did not act in a predictable manner like an intermediary, and instead worked as a mediator. Weedon (2015) describes how mediators' "outputs are not predicated entirely on their inputs, and who therefore make a difference by *changing or making durable* the behaviors and responses of other actors" (446). Through its interactions with players bodies, the goal, the referee, and technologies, the match ball made a difference in how fans bodies reacted and moved during the campaign. Physical activity was organically created through this network, as opposed to a pre-planned defined activity as often seen in policy campaigns



Figure 1.0: A visual montage from our collaborative ethnography with the ball as actant in the mega-event physical activity network of the 2023 FIFA Women's World Cup.

Simultaneously, there were other important footballs around the World Cup that became part of physical activity networks. Both authors observed children playing with their own FIFA branded balls at the stadiums, at homes, schools, neighborhood parks, and a range of other public spaces. It became a form of entertainment as they mimicked the players they saw on TV or the other kids in the BeActive #BringtheMoves social media campaigns. It seemed that many children across the country were juggling and kicking the ball with new levels of enthusiasm. Importantly, this movement was not solely part of the official BeActive #BringtheMoves campaign or organized football programs in the country, but rather spontaneous movement created by a combination of both watching the players on TV and the physicality and potential of the ball sitting, rolling, bouncing in front of them. The ball in all of these situations is important as it directs, enacts, and impacts the PA and movement of other bodies in an array of settings.

Here we offer a short vignette to highlight the agentic role of the ball on the field, at the stadium, in houses and school fields around the country:

She sits eagerly with her FIFA WWC branded football on her lap, proudly wearing her school football tshirt, ready for the action to begin. Her big brother jostles next to her, making space in the beanbag for both of their young bodies. Parents and grandparents find their places in the couches behind. With patience wearing thin, she throws the ball too high, only to chase it down the hallway. Bang, bang, bang, the sound of the football being kicked against the back of the door receives a stern set of words from her father. As the game begins, everyone settles in, cheering loudly, groaning in agony and frustration when the ball is lost, or an unsavory decision is made.

Although 'their' team lost, she goes to bed excited, feeling the energy of the game in her limbs, twitching with anticipation to play tomorrow. First one up, and out the backdoor, kicking the ball against the back fence, dogs barking, waking up the neighbors. By the time her brother joins the activity, her fringe is sticking to her forehead, well warmed up and ready to tackle him to the ground, if need be. But this time he doesn't try to steal her much loved ball, and instead she takes a spot in the goal. As he shoots it straight at her small six year old body, she doesn't jump aside, standing her ground, channeling the confidence of the women on the TV last night. Mum joins them for a few kicks, while dad prepares breakfast for them all.

Later that day at school, she gathers with the boys and a few of the girls on the muddy field, a new enthusiasm for the game sparked by the everyday presence of football in the home, the topic of conversation among parents, friends, and teachers. When the bell rings, she runs to collect her filthy football, holding it under her arm proudly as she skips back to class, all the while chattering with her friends about the flying leaps they saw the goalie doing on the TV and the huge tackles as the players bodies collided in mid-air.

This vignette is illustrative of the network of physical activity that emerged within and across homes, schools, and neighborhoods during the FWWC23. In this exemplar, the ball and the girl come together (along with various other human and nonhuman actants) to create movement; kicking in the hallway, running in the backyard, playing on the muddy field. Of course, the ball and the girl are enmeshed in a larger network with the ball she witnessed on TV during the shoot-out described above, with the players she watched, with nationalism, inspiration, and other bodies. Importantly, these networks are produced through both humans and nonhuman actants,

and it is a network that is often overlooked when thinking about physical activity and mega-events.

Physical Spaces in PA Networks

After the 2023 FIFA Women's World Cup ended, the FIFA president Gino Infantino, described the tournament as “truly transformational” saying, “In the host countries, we had almost two million spectators in the stadiums—full houses everywhere—and two billion watching all over the world” (FIFA, 2023c). In Aotearoa New Zealand, over 700,000 spectators attended stadiums in four different cities (MBIE, 2023). For those who attended the games, the physical space of the stadium and its surrounding environment became intimately connected to physical activity. Incidental PA came to the fore in how people accessed the stadiums as there was no parking at the sites, and instead ticketholders were encouraged to walk or take public transportation to the stadiums.¹ For three of the four cities (Wellington, Dunedin, and Hamilton) the stadiums were a relatively short walk (under 2km/1.2 miles) from many of the hotels and accommodations for visiting fans. For Auckland, as the stadium was around 3.4km/2.11 miles from the CBD, fans were encouraged to take public transportation, while those who opted to drive had to park in the surrounding neighborhoods. However, the walks to the stadiums were not always direct and fans movements were modified and affected by the surrounding architecture in the neighborhoods around the stadium. Once at the stadium, fans had to enter through assigned gates, often being required to walk to the other side of the stadium to have their ticket scanned.

Inside, it was the tunnels, stairs, seats that interacted with humans to form the PA network. After having located their assigned section, fans had to walk up and down stairs trying

¹ Ticketholders were able to access free public transportation and free shuttle buses were available from select locations to the stadiums.

to find their seat row and then shuffle in, often causing those already seated to have to sit up and down to let people pass. During the game it was common for fans to get up again to use the restroom or find food where they had to once again meander along the stadiums' tunnels walking in a specific pathway dictated by the building's infrastructure. Throughout the entire event, humans were continuously moving in some form or other –interacting with the building, the seats, the tunnels, around other bodies– all modifying and becoming part of that movement network. Importantly, however, bodies move and are moved differently through their varied interactions with physical spaces and objects.

While stadiums often garner much of the attention in sporting mega-events literature, many more people from around the world, and across Aotearoa New Zealand, watched mediated version of the games (i.e., televisions, computers, phones, other digital devices). Previous academic and public discourse has critiqued the 'couch potato' effect of watching sport on television, with such arguments running counter to physical activity campaigns (Yardley, 2017; Hamer et al., 2014). However, with people increasingly watching sport from mobile devices, we can no longer assume that one is always on their couch while consuming sport. Whether sitting at home on the couch, a barstool in a crowded bar, or on a plastic seat in a stadium, viewing sport often requires the body to be (temporarily) seated. Some viewers may be watching while on the move, whereas many others may gather in homes, bars, or other social spaces (e.g., school hall) to share the viewing experience. While much research has focused on the human in such situations, within ANT, "no science of the social can begin if the question of who and what participates in the action is not first of all thoroughly explored" (Latour, 2005: 72). This encourages scholars to look at the vital role of objects in such spaces, examining how "things might authorize, allow, afford, encourage, permit, suggest, influence, block, render possible,

forbid and so on” (Latour, 2005: 72). For our purposes, it meant thinking about how the physical space, bodies, and nonhuman objects (e.g., chairs, TVs, phones, barstools) interact as part of the physical activity network. Below, we briefly consider the ‘seat’ or ‘chair’ as just one of many possible examples to explore the role of objects within physical activity networks. More specifically, we speak to how the chair took on different roles as it interacts with various people and other objects.

Watching women’s football from the couch at home is often different for a young child, an elderly viewer, or someone living with a disability, illness, or injury. Such experiences are often highly gendered, with many women navigating their viewing around others’ needs, jumping up to fetch food or drinks for their families or guests. The seat for them does not provide comfort or relaxation, but rather makes itself known and can work to “disrupt the desired action” (Kerr, 2014: 91), as women have to maneuver around, push up from, and/or find a space on the couch as they move around the house.

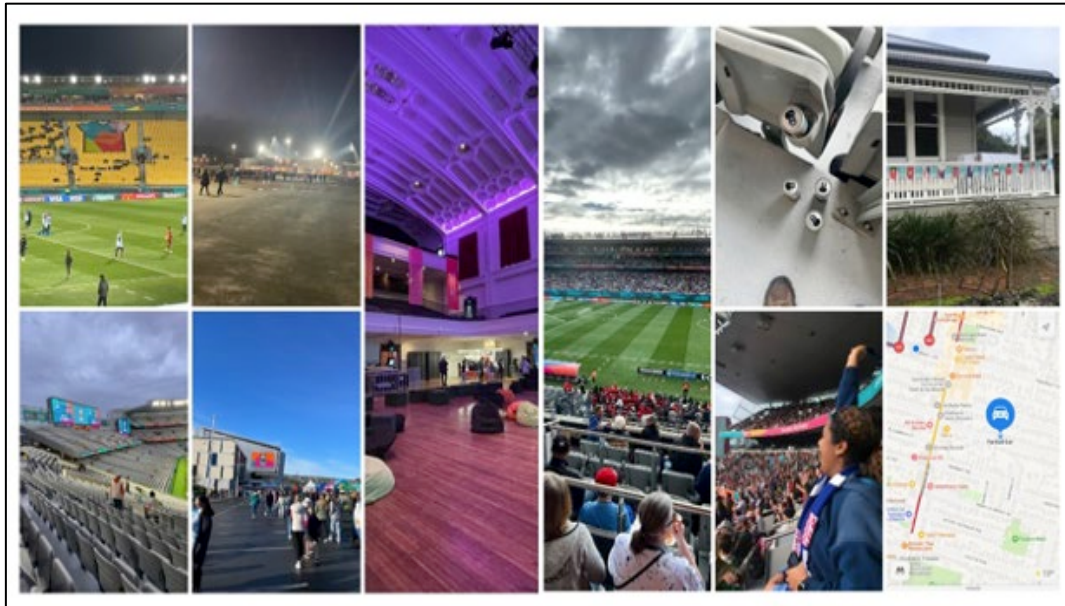


Figure 2.0: A visual montage from our collaborative ethnography highlighting the stadium and seat as actants in the mega-event physical activity network of the 2023 FIFA Women's World Cup

For those in the stadium, the plastic seats are designed predominantly for able-bodied fans, and can cause considerably discomfort for aging, older, disabled, or injured bodies. The ability to jump up from a seat to cheer or dance, or to even move freely to the bathroom, is not shared by all. Despite various efforts to make the stadium venues more accessible for people with a variety of disabilities (Quiet rooms at some stadiums, Audio Descriptive Commentary at the games, accessibility tickets) (Firstport, 2023), it was still difficult for some people with limited mobility to access and move around the stadiums during the tournament (having to find elevators, ramps, restrooms with disabled stalls), having a different experience with the infrastructure (Kitchin et al., 2022; Brown, 2022). While those in wheelchairs may have been able to access the stadium, the physical mobilities within the stadium, and their viewing pleasures of the game, were impacted through interactions with various objects and physical spaces. For example, often those with disabilities were seated in special sections without

accommodations for their family or friends. As this example of the ‘seat’ highlights, various objects can act as both a mediator and intermediary to facilitate and inhibit movement, depending on interactions with different bodies and physical spaces.

An ANT approach calls for scholars to explore the collaborative potential of humans and nonhumans in producing, enabling, or constraining physical activity. As Weedon (2015: 445) writes, ANT “means insisting on the radical distribution of agency as the effect of collaborations, as opposed to being set forth from human intentions: everything is active in cultural-natural-techno-logical collectives, and anything present is therefore potentially agentic.” Hence, it becomes integral to not only recognize the various objects present in such networks (ball, tunnels, chairs, couches), but how these objects play different roles as they interact with different bodies, policies, and experiences. Herein we offered the seat as one example of how an ANT approach might expand understandings of physical activity, encouraging us to explore how movement is also affected by a range of actants present in such spaces and places: stadiums, homes, tunnels, stairs, seats, ideologies, bodies. Such spaces and infrastructure are integral to how bodies move, interacting with different people in unique and interesting ways. In writing about ANT, Michael (2017: 32) states that, “‘The agency of nonhumans’ enables the agency of humans which enables the agency of nonhumans and so on.” Such an approach encourages us to not only examine physical activity as the result of policy initiatives, or intentional human activity, but also to consider the agency of nonhuman actants with bodies constituting physical activity networks.

Cars have come to a standstill as they get closer to the stadium, people turning left and right looking for a spot. Cars go up and down different neighborhood streets, anxious to find a parking spot but also aware of the multiple ‘No stadium parking’ signs plastered around the side streets surrounding Eden Park, New Zealand’s national stadium nestled in the Mt. Eden and Kingsland suburbs of Auckland. As frustrated drivers weave around the

neighborhood, those fans lucky enough to have found a park or those that took the train, begin to flood towards the stadium walking for what feels like ages.'

Once inside the stadium, fans are weaving in and out of each other following signs for their assigned section, climbing the multiple stairs to their row, and then awkwardly scooting past other fans as they finally find their seats. For those too anxious, excited, or bored to sit and wait, they wander around the circuitous hallways of the stadium looking for the least crowded food stalls, bathrooms, and FIFA shops, while others walk aimlessly about taking in all the sights, sounds, and smells of the stadium.

Most bodies are seated now, eyes following the ball, bodies leaning in. Looking around, we note that not all share the embodied focus of the core fans. A small child squirms on his father's knees, distracted by the sauce dripping from a hotdog, running down the back of the grey plastic seat. A group of young men and women drinking beer, laughing loudly together. Older bodies shifting to find moments of comfort, recovering from the walk to the stadium, up the many stairs, catching their breath. Some in wheelchairs find their spots, but strangely separated from family and friends. As a team scores, many leap to their feet, shouting and waving their arms, dancing with happiness. The father's shirt is covered in sauce, and a beer is spilt on a neighboring shoe. But the ability to jump to ones' feet and cheer for their team, or even to move along the row to access the bathrooms, are not readily available to all. Mega-events and moving bodies, enabled and constrained, differently.

In this vignette, we highlight the multiple ways that fans interact with objects at the stadium and event (seats, hallways, other people, parking restrictions, traffic) to highlight the powerful role objects play within movement patterns at mega-sporting events. Simultaneously, our vignette and analysis emphasize the unique interactions people have with objects and the different movements patterns based upon a range of factors (age, ability, gender). Such ideas align with Giulianotti et al.'s (2015) research on the London 2012 Olympics that utilizes a mobilities paradigm to emphasize how power and politics become embedded within movement patterns and practices at the Olympics. In their analysis, the authors showcase how one's freedom and speed to move across the city during the Games correlated to how much power and prestige they held (Olympic officials, elites, tourists), often to the detriment of locals and those living in the city who were faced with restricted mobility. Our ANT inspired-analysis similarly reveals the varied

ways human mobilities (or physical activity) were restricted and/or enabled during the FWWC23 through a range of factors connected to different social and power structures within society.

Conclusion

Within the BeActive #BringTheMoves campaign and similar efforts by organizing committees and stakeholder organizations, PA is often seen as a singular, stable entity produced by human intentionality, that can therefore be activated through motivational and targeted campaigns. But research has consistently shown that human bodies are not simply activated to move by mega-events themselves or by associated campaigns. Thus, in this paper, we have explored the potential of Actor Network Theory for rethinking the relationship between physical activity, sporting events, and PA campaigns and policies. In many ways, ANT provides great possibilities to rethink definitions of physical activity and for scholars to understand sporting mega-events. As discussed above, various scholars have highlighted the need for health organizations and health-related policies/educational initiatives to broaden dominant understandings of physical activity (Piggins, 2020; Budzynski-Seymour et al., 2022). Here we found ANT as theory-method useful for understanding physical activity as a network of heterogeneous elements that is not a “special domain, a specific realm, or a particular sort of thing, but only as a very peculiar movement of re-association and reassembling” (Latour, 2005: 5).

Examining physical activity as a network meant recognizing that it is constantly being reconfigured and changing depending on the actants and the various roles that such actants play, within and across space and place. Hence, physical activity movement and patterns are always different since they are a “contingent effect of ongoing conglomerations between a hybrid cast of ‘actors’” (Weedon, 2015: 437) that can emerge more organically and spontaneously. These actors are not solely human (or based on human desire), but can also include specific policies,

ideologies, and objects (i.e., ball, seats) where such actants shift roles between mediators and intermediaries. Using such an approach to PA policies, allows for a recognition of the multiple and varied forms of physical (in)activity that are often not taken into consideration in more traditional understandings of PA and mega-events. In so doing, ANT might encourage policies and initiatives that move away from standardized definitions of movement that revolve around human intentionality, organized programming, and quantifiable outputs, to approaches that consider PA as always emerging and as a complex phenomenon that is dis/re/assembling with human and nonhuman actants. For example, current policies that seek to increase women and girl's physical activity through mega-events could recognize the more-than-human dimensions to girls and women's active lives (equipment, domestic duties, clothing, fields) to better implement more effective policies. Therefore, we believe ANT can be a useful pathway forward for scholars of sporting events and physical activity as it encourages context-specific and creative methodologies for mapping the multitude of objects/humans/technology/nonhuman actants that are productive in our society.

Importantly, every theory has strengths and limitations. While ANT proved to be a useful theoretical lens and methodological approach for rethinking physical activity as a network, we also experienced challenges and recognized its limitations. One of the common critiques of ANT is that it is not a "true theory" and the approach is too descriptive, failing to provide suggestions for how actors should be seen and their actions analyzed or interpreted (Cresswell et al., 2010; Law, 1999). Indeed, at times we found it challenging to decide which objects were important within the physical activity networks, and what actants to follow. Of course, there are thousands of objects that are part of networks, and it can become difficult to trace these networks in a way that showcases which objects are the most significant. Importantly, the key point of this paper is

not to suggest that ANT is the only theoretical pathway toward rethinking the relationship between mega-sporting events and physical activity. Rather it is to highlight the value in alternative theoretical, methodological, and representational approaches to build upon and expand our understandings of mega-events, physical activity, and health. In so doing, we hope to showcase the possibility of using ANT to complicate dominant narratives of sporting events and physical activity. In broadening such understandings of mega-events and PA campaigns, we can therefore better account for the huge variation in how people and objects move and are moved by mega-events.

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