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Play and Skillful Coping
Shared Experiences in Contemporary Sports and Video Games

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Maximilian Karge B.Sc.

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Abstract

English: This thesis explores the contemporary media convergence in the domains of traditional sports and video games. Specifically, the focus of this work lies on the so-called flow experience as it emerges in both types of activities. The goal of this is a) to demonstrate a lived and applied context that shows a contemporary convergence of experience of sports and video game cultures under the digital transformation, b) to contribute to the current fields of game studies and game design with concepts out of 4E cognitive science, and c) to open up the domain of video games as a field of study of embodiment in digital environments. In order to fulfill these demands, this work will propose and answer three research questions. To gain an understanding of the shared aspects in the experience of flow in sports and video games, the first question asks: **1) What are the affordances and constraints shared by contemporary sports and video games that contribute to the experience of flow states?** Having established an overview over these shared aspects, the second question asks: **2) How and why exactly do those affordances and constraints enable flow states?** Lastly, with a more detailed understanding of these shared aspects, the final question asks: **3) What do contemporary traditional sports and video games share in their affordances and constraints that contributes to their convergence?**

These research questions will be answered by instrumentalizing methods from several interdisciplinary fields. First, the current work will situate the domains of play and games as well as the phenomenon of flow theoretically. Methodologically, this will be done by literature research and integrating the contemporary discourses from the fields of *game studies*, *game design*, *media studies*, *philosophy of mind* and *4E cognitive science*. The second half of this work will then make use of autoethnographic methods from several of these fields in order to apply the previously theoretical findings to a lived context. Finally, this work shows how the experience of flow is structured highly similarly in certain types of sports and video games. It specifies the shared, underlying aspects in two traditional sports (*Snowboarding* and *Mixed Martial Arts*) and video games (*Elden Ring* and *Monster Hunter: World*) that make possible the experience of flow and, further, explicates how specifically they enable flow in the first place. Most importantly, this work shows the – still opaque and often only unidirectional – approximation of experiences in contemporary sports and game culture.

German: Diese Arbeit untersucht eine aktuelle Medienkonvergenz in den Bereichen des traditionellen Sports und der Videospiele. Besonderer Fokus liegt hierbei auf dem sogenannten Flow-Erleben. Ziel dieser Arbeit ist es daher a) einen gelebten und angewandten Kontext zu zeigen, der eine zeitgenössische Konvergenz der Erfahrung von Sport- und Videospielkulturen unter der digitalen Transformation demonstriert, b) mit Konzepten aus den 4E Cognitive Sciences einen Beitrag zu den aktuellen Feldern der Spielstudien und des Spieldesigns zu leisten, und c) die Erschließung des Bereichs der Videospiele als Untersuchungsfeld für digitale Formen der Verkörperung. Um dies zu erreichen, stellt diese Arbeit drei Forschungsfragen auf und beantwortet diese. Damit ein Verständnis für die gemeinsamen Aspekte des Flow-Erlebnisses in Sport und Videospielen erlangt wird, lautet die erste Frage: **1) Was sind die gemeinsamen Erleichterungen und Beschränkungen von zeitgenössischem Sport und Videospielen, die zum Erleben von Flow-Zuständen beitragen?** Nachdem sich ein Überblick über diese gemeinsamen Aspekte verschafft wurde, lautet die zweite Frage: ***2)* Wie und warum ermöglichen diese Erleichterungen und Beschränkungen Flow-Zustände?** Schließlich, mit einem detaillierteren Verständnis dieser gemeinsamen Aspekte, lautet die letzte Frage: 3) **Was haben zeitgenössische traditionelle Sportarten und Videospiele in ihren Ermöglichungen und Beschränkungen gemeinsam, das zu ihrer Konvergenz beiträgt?**

Methodologisch wird sich diesen Forschungsfragen durch mehrschichtige Methodologie genähert. Im ersten Teil der Arbeit werden die Bereiche des Spiels und des Spielens sowie das Phänomen des Flow theoretisch abgegrenzt und verortet. Dies geschieht durch eine Literaturrecherche und die Integration der aktuellen Diskurse aus den Bereichen Game Studies, Design, Media Studies, Philosophy of Mind und 4E Cognitive Science. In der zweiten Hälfte der Arbeit werden dann autoethnographische und phänomenologische Methoden genutzt, um die zuvor theoretisch gewonnenen Erkenntnisse in einem gelebten Kontext zu analysieren. Die Arbeit zeigt, dass das Erleben von Flow in bestimmten Sportarten und Videospielen sehr ähnlich strukturiert ist. Sie spezifiziert die gemeinsamen, zugrundeliegenden Aspekte in zwei traditionellen Sportarten (*Snowboarden* und *Mixed Martial Arts*) und Videospielen (Elden Ring und *Monster Hunter: World*), die das Flow-Erlebnis ermöglichen, und erklärt weiter, wie genau diese das Flow-Erlebnis überhaupt erst ermöglichen. Vor allem aber zeigt er die – immer noch sehr undurchsichtige und oft nur unidirektionale – Annäherung der Erfahrungen in der zeitgenössischen Sport- und Spielkultur.

Declaration of Authorship

I hereby declare that I have written this thesis independently and have used only the sources and aids indicated. All text passages and lines of thought taken verbatim or in spirit from other works are identified by precise indication of the source in the form of annotations or in-text citations. This also applies to sources from the Internet, where the URL and date of access are also given. I am aware that any case of plagiarism will result in the non-assessment of the entire course and must be reported to the Director of Studies. Furthermore, I confirm that I have not already submitted this work for assessment elsewhere.

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1 Introduction

The phenomenon of playing as well as the concept of games are essential aspects in human cultures and societies worldwide and – in the case of play – even extending beyond them to other, non-human animals. Both phenomena, play and games, received extensive consideration in academic discourse, where they are viewed not only as a fundamental aspect of learning and individual cognitive development (Kahn & Wright 2013) but also as a fundamental constituent of cultural practice as it forms and changes over time (Huizinga 1998). Being an essential aspect of human experience, play constitutes a significant practice in so far as it is autotelic (Sutton-Smith 1997, p. 185). That is, while it is instrumental in processes of learning, development and expression of identity and culture, it is undertaken for no other reason than being enjoyable in itself. Related to this, another significant aspect in play is that it seems to establish an experience of reality that transgresses the logics, norms and rules that hold, otherwise, in what I will naively call 'ordinary life' here and replaces them with an alternative, 'virtual' reality. Play, like almost all aspects of life, is further transformed through what can be approached as media convergence through the digital transformation of our world (Jenkins 2006). The introduction of computational and digital technologies does not only transform our environments and everyday experience thereof, it also enacts wholly new, digital environments and spaces in which individuals and societies in general play out their lives. Games are no exception from this transformation and it is the intersection between games and digital technologies as mediating the experience of reality that is my main interest in undertaking this work. Specifically, this thesis is to deepen the understanding of how digital technologies constitute novel frameworks for games to take place in (for example, in the form of video games) and how they transform the experience of already existing, thoroughly institutionalized forms of games (for example, in the 'digitalization' of traditional sports), resulting in a trend of convergence between the two domains (Kayali 2013).

In order to appropriately situate this work, I have to note that I am myself heavily invested in playing both video games as well as practicing sports as a recreational activity. Specifically, I want to investigate the experience of flow, or 'being in the zone' which emerges during very demanding and challenging activities, in which there is no time – or well-deliberate choice to make – with regard to the best strategy to take, once the playing activity starts (as in contrast to games that have discrete state spaces, like chess). One of the main reasons for my

fascination and enjoyment of video games is the potential to enact otherwise dangerous, even life-threatening activities in a virtual safe space and without the dangers that the activity would hold 'in real life' (Kayali 2019). In my free time, I also practice Mixed Martial Arts (MMA) and snowboarding. Both of these sports are so-called 'risk-' or 'adventure'-sports in which there is the very real danger of getting injured or worse. As a matter of fact, this danger is a constitutive aspect of both sports which by the rules and technical framework of both is organized in such a way that it still provides a manageable and, therefore, enjoyable experience. In all of this, a very fascinating yet elusive experience to me is the hyper-focused state of mind in which nothing but the activity of the present moment seems to exist and where consciousness seems to dissolve into the action of playing the game – the experience of 'being in the zone', or in flow. I will engage with the flow experience as it emerges in the – under the digital transformation – converging domains of traditional sports and video games.

1.1 Aim and Research Questions

Approaching and exploring sports and games as well as flow states from a 4E perspective these premises through the particular phenomenon of flow states then, should prove as an entry point that encompasses and brings to light in an applied context at least three aspects: The intersections between traditional sports and video games, the distinct forms of experiences such practices can afford and as their value for an embodied, enactive cognitive science in exploring extraordinary mental states such as flow. The research questions posed in this thesis therefore go:

1. ***What are the affordances and constraints shared by contemporary sports and video games that contribute to the experience of flow states?*** Constructing a typology of affordances and constraints that are, responsible for the emergence and sustainment of flow states that are equally inherent to video games and classical sports, will exemplify and contextualize their digital convergence which I hypothesize in this work and which has been done so by others before (cf. Miah, 2017).

2. ***How and why exactly do those affordances and constraints enable flow states?*** This, – I presume, – might prove to be valuable, not only in creating engaging learning environments, but also in contributing to the discourse around and understanding of the mental phenomenon of flow states in general.

3. ***What do contemporary traditional sports and video games share in their affordances and constraints that contributes to their convergence?*** On the one hand, this question makes clear one of the dimensions along which such a convergence can be observed, namely flow states. On the other hand, it allows a thorough examination of the mental phenomenon of flow states in several contexts.

These questions will be answered by emphasizing that cognition is embodied, extended, embedded and enacted (Newen et al. 2018). Using the terminology and concepts of 4E cognitive science and focusing on the role of the body and its movements will contribute valuable insights into the experience that emerges in challenging, skillful action in sports and games.

1.2 Structure

This work aims to investigate the flow state occurring in sports and video games. The current, first chapter introduces the goal and research question of my work and the content structure of its following chapters. As such, it also contains a description of the methodologies that I use for the later analysis and as a conclusion, explicates the connection between my body of work and the study of cognitive science.

Laying the conceptual groundwork, chapter two introduces the concepts of play and games as distinct but related concepts that situate a framework which is known to regularly enable the flow experience. This is to establish games as a concept that allows for coverage of both traditional sports and video games under the same notion. Importantly, this introduction and demarcation of the concepts is also to show the general proximity between video games and traditional sports in that both activities are essentially games and, as such, share many aspects regarding the virtual reality both can constitute. The skills acquired and practiced in the contexts of games also extend beyond the activity itself and into individual life in general. As such, they also make a distinct impact on our experience and cognition, an impact that should further be observable in some form outside the context in which they emerge.

Chapter three will further situate the domains of sports and video games in light of contemporary digital technologies. The digital transformation changes many aspects of the experience of the world and games are no exception in this. A media convergence through digital transformation, as envisioned for example by Andy Miah (2017), allows one to see sports and video games as increasingly intertwined and overlapping in how they are

conceptualized, practiced, and experienced. The general tenet here is that with an increasing presence of digitality in all aspects of living, it becomes difficult to uphold a hard distinction between digital and physical corporeality.

Chapter four gives an overview over the contemporary field of 4E cognitive sciences including the general concepts at play therein, as well as the relation and application of these concepts to the fields of sports and video games. This overview will be followed by an outline of flow as a phenomenon that often emerges in specific contexts of play and games. A perspective of embodied, enactive cognitive science is particularly useful for understanding both the experience of sports and of video games as converging domains.

Chapter five gives a phenomenological analysis of the flow state as it emerges in video games and sports, respectively. Specifically, the analysis will encompass four cases, two video games and two sports in the form of an autoethnographic description following the personal experiences I made practising these activities.

In chapter six, this analysis will be further discussed in light of the preceding theoretical framework In order to do so, it will feature a typology of the affordances and constraints of flow, which will be further analyzed and approached under the light of the research questions posed in this work.

Concluding the work, chapter seven will provide an outlook considering the findings, limitations, impacts, challenges and the potential implications and further research that result from it.

1.3 Methods

To answer the question of affordances and constraints shared by sports and video games that produce a flow state, I will bring together overlapping discourses in several academic fields: These are contemporary, situated theories of cognition and their applications in sport psychology and game design, the philosophies of science and technology, of play and of games (encompassing both, traditional sports and video games) and of phenomenology. As there is no consistent single approach in contemporary works exploring the phenomena of concern here, multiple methods will be instrumentalized and integrated. Throughout the first part of the thesis, the main methodological approach consists of literature research and analysis which includes aligning the fields of sports and games with the concepts used in 4E cognitive science – which themselves are grounded partly in the philosophical current of

phenomenology. The paradigms of 4E cognitive science are particularly suited to analyze cognition in dynamic, often highly demanding environments (Hutchins 2010) which further are often congruent to the environments in which one experiences flow states. The flow experience will be the focus, as it is a phenomenon that characterizes not only the experience of many risk-sports but also represents an experience that is a benchmark for quality in the design of video games (Salen & Zimmerman 2003). Therefore, analyzing the contemporary literature on digital convergences, particularly between sports and video games, serves as an entry point for embodied, enactive cognition to explore this convergence in the case of flow. Looking through the lens of 4E cognition on such experiences shall in turn lead to a general set of characteristics constituting the virtual worlds enacted through sports and video games as well as how both mediate phenomenal experience, respectively.

Lastly, integrating the previous argument with contemporary discourses in the field of sport psychology and education, I will outline an initial typology of dimensions (i.e., a set of affordances and constraints) that characterize flow states in sports and video games. Thereby, I will point out the value of such virtual worlds in the context of learning and cognitive development but also in the context of formation and expression of individual identity. Using these theoretical concepts, I will proceed to present and analyze a selection of instances of traditional forms of sport and video games, phenomenologically and comparatively, regarding their relation with flow states. In order to do so, I will apply a phenomenological analysis to a series of use cases that embody the flow state, whereby these cases represent two types of traditional sports and two types of video games, respectively.

As there is no established method that approaches video games and sports comparatively, in this work I will bring together methodologies exploring each domain respectively and let them speak to each other. While the first part of the work will be a literature research that situates the domains of video games and sports, the part of the work will be grounded in a qualitative, **autoethnographic** approach. In the following section, I will elaborate on the specific approaches that helped me analyse the phenomena I want to investigate in this work.

I will draw on and combine several of the contemporary qualitative approaches to analyzing video-game experiences, experience of athletic performance and of the mediation of experience through technological artifacts. More specifically, the phenomenological analysis of playing video games will be undertaken by way of autoethnography and orienting at Boellstorff's ***'Ethnography in Virtual Worlds'*** (2012) which allows to engage the digitally

constituted environments that make up video game worlds but also the virtual, alternative worlds and realities one experiences in games and sports more generally. This approach of practicing ethnography will be extended by Clifford Geertz (1773) concept of ***thick descriptions***. Combining these approaches enables the analysis of personal experience of actually playing a game to take into account the sociocultural, implicit aspects, such as the specific practices and social structures of a games community of consumers. In the specific context of video games and of the present work, this will be accounted for, on the one hand, by focusing on the dimensions of ***gameplay*** (i.e., a players capacity to act, strategize and navigate the game-world) and ***game-structure*** (i.e., the rules and underlying technological structures of a game) (Aarseth 2007), whereby gameplay provides an entry point into the experiential, psychological aspects of playing, and game-structure allows to analyze the underlying technological and design choices, as well as their impact on experience, thus allowing a reflective and situated interpretation (Lammes, 2007).

Further, I will follow the ***essential categories of analysis of video games*** by Consalvo & Dutton (2006) which are: 1. The object inventory, i.e., virtual objects the player can interact with and use, 2. the interface, displaying information about the players status and as their surroundings and affordances for their manipulation inside the game, 3. the interaction with other entities with agency in the game – for example, other players, non-player-characters, enemies –, and, 4. a gameplay-log representing a record of the overall experience of the in-game world as the player navigates and plays in it. Doing so will capture the most prominent, generalizable aspects of digital games while it also provides an initial structure of the different dimensions that constitute the play-experience and, more specifically, the emergence of flow.

While in this work, I argue for a convergence between the experience of traditional sports and video games – and while in research on both fields there is an emphasis on the importance of analyzing their experience through qualitative and/or phenomenological method – they are still very different forms of experiencing (just as different sports, video games and games generally situate different forms of experience). Thus, one challenge in this study – but also a potential field of further research beyond this text – is the absence of a specific methodological framework that comparatively explores sports and video games through the same lens. A remedy for this might be Don Ihdes (2012) ***post-*** or ***experimental phenomenology*** exploring the mediation of human experience by technological artifacts and at the same time how the structure of human experience affords specific forms of

technological artifacts, i.e., how both experience and the use of technology are in mutual co-production. Essentially, Ihdes postphenomenological analysis of human-technology interaction encompasses three dimensions, all of which are overlapping and mutually constitutive, making it impossible to deterministically situate anyone as universally determining the others. These dimensions are: The sociocultural background situating the human-technology engagement, the material form and structure of the technological artifact, and finally, the bodily practice that is enacted in using the technology. Contextualizing the analysis of video-games, as well as analyzing lived experience of sports will therefore allow for an integration of these different play-practices, and to conciliate the apparent tension between traditional sports- and video-game experiences also on an applied level and beyond their theoretically described convergence.

1.4 Relation to Cognitive Science and Interdisciplinary Approach

In the cognitive sciences, games as an experimental paradigm are certainly not a novelty, as very prominently exemplified in using performance of artificial agents in video games as a benchmark for their cognitive capacities[1]. However, much of the research in the disciplines that contribute to the cognitive sciences approach cognitive capacities and structures in isolation, both from other cognitive structures of the same system as well as in the experimental environment in which these structures are looked at, i.e., in highly controlled environments which are very far from real-life action as it is experienced by a human being. Nevertheless, there are paradigms that are more dedicated to an understanding of conscious experience as an emergent property, i.e., as more than just the sum of all the cognitive modules that make up a mind. The specific branch of 4E (embodied, extended, enacted and embedded) cognition approaches consciousness as such an emergent property and, therefore, emphasizes the need to understand cognition as it unfolds in lived, dynamic real-life contexts. The sports and video games looked at in this work are exactly such contexts. Approaching them and the flow experiences they afford from a perspective of the 4E cognitive sciences provides not only valuable insights into elusive states of mind such as flow but it also contributes to the validity of using games as an experimental paradigm for the cognitive sciences.

[1] see for example *Deep Blue* winning in the US TV show *Jeopardy* (2011), *AlphaGo* winning against world-class Go players (2015), as well as OpenAi beating two champions in the popular video game *Dota* (2017)

Employing an enactivist view on the interdisciplinary field of research on games and playing should therefore enrich the understanding of such environments and contribute to a variety of approaches to this field of study. At the same time, the field of games should prove as an excellent space to contribute to the growing discipline of 4E cognition. Looking at flow states, this becomes even more apparent when looking at flow states, as the phenomenon of flow proves hard to directly access in a quantitative way or, as well as in isolating laboratory conditions. Sports are nevertheless one of the fields where flow states are of regular occurrence. Thus, considering digital games and traditional sports as converging fields, specifically in how they elicit flow states, is an entry point into digital games as an experimental paradigm that affords complex, dynamic environments, while retaining a necessary degree of control over the experimental environment.

A specific focus on flow states as the investigated phenomenon will be very helpful in weaving together the different strands of interest that constitute this work. For once, being in a state of flow is an experience that is very present in playing sports or video games and as such one of the dimensions along which both converge. As a matter of fact, one could argue that many sports (specifically risk and extreme sports) and video games are designed – or at least demand from their players – a sustained high-level performance of skillful activity which in turn is one of the foundations of flow experience. This 'ease', or relative safety of environments in which flow states can emerge, I argue, makes a large part of the fun and often is the purpose of playing a game. It also makes the contexts of games an excellent environment to acquire new skills through enjoyable activity. As an exceptional state of mind, flow states also present an interesting phenomenon of experience for the cognitive sciences to explore and since flow states are often described as a convergence of action and consciousness, taking an approach of 4E cognition seems very well equipped to explore such experiences of full, bodily immersion into a skillful activity, be they digital or analog.

Over the first half of the work, I will integrate the theoretical foundations of several disciplines and consider their contributions, either to the understanding of sports and video games, the understanding of cognition in action as well as the role of technological mediation in human sense-making. As such, the disciplines that inform my argumentation are the cognitive sciences, specifically, the philosophies of mind and the 4E approaches to cognition, the contemporary discourse in new media and game design studies, and the philosophy of science and technology. Each of these disciplines contributes either to an understanding of play and games or the technological mediation of experience while also to the organization of

cognitive structures and processes in playing video games and sports – therefore, contributing to an understanding of the structure of the flow experience and how it is afforded and constrained in the context of playing games.

2 ‘Levelling the Playing Field’– Play, Games and the Magic Circle

Intuitively – as with many sociocultural practices – it might appear relatively simple to conceptualize what exactly games are and what they are not. In engaging with the phenomenon more intimately, however, delineating games from the rest of reality becomes much more complex. The academic discourse in the field of games and playing reflects the ambiguity of defining the concept, and the challenge of discerning game from non-game will be the content of the following paragraphs. This chapter will therefore first introduce and outline the general concept of play in section 2.1, before narrowing down the scope to the more specific phenomenon of games in section 2.2 and conclude with the most impactful aspects both domains have on experience and cognition.

2.1 Play(ing) Culture

Although not every instance of a game or sport constitutes the act of play, studies of sports and games are historically preceded by and grounded in studies of play. Seminal text in the field is *Huizinga’s Homo Ludens: A Study of the Play-Element in Culture* (Huizinga, 1998) which is an analysis of the role and importance of play in human culture. It should be noted that the activity of play according to Huizinga precedes even human culture and civilization as simple forms of play can be observed in many other species besides humans (Bekoff & Byers, 1998). While there are of course more complex forms of play – for example, and most importantly for this work, in the form of games – all play is at its essence an inherently meaningful activity: it is *for* something (Huizinga 1998, p. 1).

Explanations pertaining to the function, meaning, or purpose of play – while they do start from this assumption as well – often take the form of biological-functional explanations (e.g. physiological or psychological). Such explanations often assume that play serves something other than itself which certainly provides insight into the role of play in life, i.e., the why and the wherefore of play. The same holds for this work, at least to a degree, as it will explore the affordances and constraints that the framework of playing games provides in learning and development (cf. Hartley et al. 1952, or Singer & Singer 1990). Before this can be undertaken appropriately however, it is equally important to point out the distinctness and uniqueness of games as such an environment. Huizinga shows that while all of these explanations may be relevant for understanding play regarding its function outside the phenomenon itself, they rarely give any information on play as it unfolds in experience or how it appears to the player

– i.e., how it is structured, why it is joyous, and why it is immersive to the point of forgetting the ‘real world’ for the duration of playing.

While biological and/or psychological explanations of the play phenomenon might very well provide insight about some general instrumental purpose or function that the activity fulfills (for example, some evolutionary, physiological, or psychological benefit), they do not at all give a reason for why anyone would engage in the act of playing itself since it is – per definition – not undertaken for anything else but itself. This is to say, explanations of such sort fail to grasp the primary, phenomenological qualities of play (Spariosu, 1989), as the activity is ultimately irreducible to a purpose that is external to this play. Yet, in itself and for the subject in the act of playing, play is inherently and always meaningful in that it is inherently fun and joyous. Significantly, the aspect of fun that constitutes play at its core demands any explanation of the concept itself to be grounded in an analysis of ‘[...] play as the player himself takes it: in its primary significance’ (Huizinga 1998, p. 3), i.e., from a phenomenological point of view (McDonald 2019, p. 251). This being said, in his work Huizinga does not follow a phenomenological method very rigorously, or even explicitly, but he acknowledges the primary quality of play being outside of the realm of rational, logical thought, instead situating it, in the subjective experience of the playing person. Essentially, this primary quality of play being inherently irrational further situates an activity that is experienced as unfolding outside of ‘ordinary life’, i.e., it is phenomenologically easily distinguished from non-play. At the same time, it is taken very seriously in its enactment, or at least it cannot be defined as a strictly ‘non-serious’ activity (Huizinga 1998, p. 6).

Importantly, the general phenomenon of play has to be further distinguished from the domain of games, whereby the latter will most of the time still contain an element of play while play does not necessarily imply a game. For example, the play of young children or animals often does not follow prescribed structures such as rules. It is enacted only because it is enjoyed and, in this, can take virtually any possible form or activity. Further, the attempt to force an individual to play could only result in an imitation of play, and only to an external observer as the person forced to play would not experience it as playing. This is also where the concept of game starts to diverge from the concept of play as a concept that predates its own culturally constructed instances: Play in itself is not necessitated by anything but the joy it provides for the person, it is ‘[...] never a task’ (Huizinga 1998, p.7) as in something that ‘has to be done’ but instead is always a time of leisure. Otherwise, it could be conceived that individuals are

forced to participate in a game, although, it is questionable then whether they are actually *playing* and not just *participating* in the game.

Closely relating to the freedom inherent to it, play situates a conscious transgression of the boundaries and structures of 'ordinary life', replacing it with a different, temporally and spatially limited form of experience in which an alternative, or 'virtual', reality is enacted. Play is mostly an interlude in the events of daily life that are perceived as more serious. Yet, in its spatiotemporally confined, alternative reality, play transcends immediate needs, goals or logics that are at work in everyday life (Huizinga 1998, p. 9-10), instead replacing it with its own regime of logic, entirely in the service of the immediate enjoyment of the playing activity. Here is where the third essential characteristic of play lies: Most of the time, it is in some form rule-governed (although, these rules often change over the course of the play instance) and thus commands order, and ultimately its own, alternative affordances to experience reality. Lastly, grounded in its spatiotemporal limitedness lies another aspect of playing that will become very important in the specific context of of games: That is, the possibility to distinguish, remember, reproduce and, ultimately, reconfigure specific forms of play with a subsequent emergence of culturally produced forms of play, as well as the formation of communities around these forms of play (Wenger, 1998). Fundamentally, the activity of playing constitutes a framework of sense-making that is experienced in stark contrast to 'ordinary life'. Through this process, play is not merely an expression and a product of culture but it is, in turn, also formative of cultural expression itself (McDonald 2019).

2.2 Playing by the Rules – Games as Structured Play

Having situated the concept of play as a spatiotemporally limited replacement of ordinary life and reality, the value it can bear for an individual also becomes more clear. Besides the more general phenomenon of play, there is also a more specific, explicit context of games as a cultural artifact that is the product of the cultural institutionalization and codification of forms of play-practices. Playing creates an environment that allows one to engage with reality in ways that transgress immediate biological, physiological, and psychological needs besides the joy it provides. While Huizinga sees play as the site of cultural production in general, others point out the value of play in cognitive development and as a site of individual learning (Kahn & Wright 2013, p. 112). The argument made here, will follow the latter and situate the experiential framework that is present in the activity of play as having a constitutional role in

the development of personal identity and ways of knowing. Ultimately, this is to show the potential benefits of instrumentalizing such a framework in contemporary educational contexts while it is also to explicate the underlying structures and processes that afford these benefits. Play, as much as it situates a transformation of the logic that normally structures experience, is also an ordering force for experience itself. Further, not all games can be seen as instances of play (although, the element of play will always permeate the structure of a game): Competitive, professional sports, for example, are not solely played as an end in themselves, but instead as means to make a living. Thus, while games themselves are historically created and grounded in the repetition of specific forms of play and, further, are often played just for the sake of playing, they can in many instances also be situated more closely to the realm of 'ordinary life'. In order to address these ambiguities, the following section will situate games as a framework in which play is ordered into a more structured, codified form, and viewing games as a domain that is very effective in affording and enabling the activity and practice of playing as such. At the same time, as will be shown, the concept of games also provides a framework for a more structured, rule-governed context of playing which, in turn, is much easier to analyze and interpret. In essence, this work is more interested in the relation and interaction between the activity of playing itself and playing a game, rather than in their differences.

The book *The Grasshopper: Games, Life and Utopia* (1978) by Bernard Suits is one of the groundlaying texts in the studies of games which since then evolved into a field of study on its own. Today, the field of games his work coined is most prominently realized in the study of video games while also, to some extent, in the philosophy of sport. Suits argues that there are four elements shared by all games: *goals*, *means*, *rules* and a *lusory attitude*: Every game has clearly defined goals. These goals can be defined in two dimensions, a *prelusory* and a *lusory* one. The prelusory goal is defined by a specific state of affairs that ends a game, for example, submission or knock-out victory of an opponent in MMA, scoring the highest score in a snowboard slopestyle competition, or defeating a difficult boss in a video game. These states of affairs are prelusory in that they could theoretically also exist outside of the game itself. For example, one of the MMA fighters could just put laxatives in his opponents water, defeating them before the fight even starts, and, hence, accomplishing the prelusory goal. Similarly, one could start and win a fight on the streets and outside of a sanctioned fighting contest. The *lusory goal*, however, consists of reaching the prelusory goal by only enacting a performance that is confined to the *means* prescribed by the *rules* (Suits 2005, p. 50-51).

Games prescribe a range of *means*, i.e., a range of – more or less – defined actions that players are allowed to take in order to reach a game's prelusory goal and it is only by these means and the rules that one can also achieve the lusory goal of winning the game. These means are not upheld for any purpose external to the game itself: the activity of playing a game is only possible by accepting its prescribed means. The means themselves are defined by the *constitutive rules* of the game. Importantly, the rules constitute a game in that they most of the time prescribe – in some sort – *inefficient means*, posing a kind of *challenge* for the participants of the game (Suits 2005, p. 38). In the case of MMA, an example of inefficient means would be to submit and/or defeat an opponent only by using very specific grappling and/or striking techniques and to do so in a set timeframe and by staying inside the ring. Suits follows that it is a prerequisite for playing a game to take on the lusory attitude and, therein, accept its rules and subsequent means, as they are what constitutes the activity of playing the game.

Suits also extends and modifies this definition of games by a definition of sports: Sports are '[...] competitive events involving a variety of physical (usually in combination with other) human skills, where the superior participant is judged to have exhibited those skills in a superior way' (Suits, 1988, p. 2). He also distinguishes between sports games and judged performances, whereby – in contrast to (sports) games – in judged performances the emphasis on constitutive rules of Suits original definition are replaced by an emphasis on an ideal of athletic skill by which the performance of individuals in a contest is judged. Further, sports seen as such explicitly athletic contests, while they often start out as activities of playing and playing games, can also be a matter of utmost seriousness (e.g., for professional athletes) and in this are not enacted in a purely *autotelic* way – that is, they become an activity that is instrumental to an external goal (e.g., making money, winning a prize, getting a trophy or a medal, being the 'best', etc.). The distinction between play and non-play in playing a game, therefore, also depends on the 'seriousness' with which the game is engaged with in the first place (Suits 1988, pp. 8-9), that is, whether the sport is played as a hobby, on an amateur level, or as a profession.

Following such a strict definition is not without its problems. For example, cheating in a game – following Suit's definition – would subsequently be an imitation of playing a game at best as it then becomes a technical activity, i.e., an activity done for some external goal like getting a trophy, prize money, or recognition. Thus, the cheater is not really playing the game, as the game has become a contest for external goals (Suits 2005, pp. 39). In contrast, to play a

game is to embrace the challenge of the game, in what Suits calls the lusory attitude, and attempt to win by its rules and means. It is in the challenging aspect of its inefficient means and the rewarding experience of overcoming this challenge by which a game affords its own enactment by its players (Suits 2005, p. 45). Contemporary studies of games, however, very much acknowledge the element of cheating as constitutive of many modern sports (cf. Upton 2011), as well as of video game culture (Kayali 2019, p. 142-143). In many games, the strategic breaking of rules is actually part of 'strategically' playing the game and, as such, does not instantly lead to the game being stopped. Instead, such strategic transgression of rules might be only lightly punished a number of times before the game is stopped outright (as, for example, with fouls in soccer and basketball, or in MMA when grabbing the fence to avoid being taken down).

A valuable critique of Suits definition and a practical overview over the complex relationship between the domains of play, games and sports, in which all of them – in many instances – overlap, is given by Klaus V. Meier (1988): In his definition, the constituents of games are conceptualized by Suits in terms of *goals*, *means*, *rules* and *lusory attitude*. While all sports are games, not all games are sports because sports usually also have the added component and prerequisite of being an athletic expression of a set of physically and motorically challenging skills. Lastly – and here, Meier follows Huizinga's (1988) definition of play – as an activity that is both pursued voluntarily and as an autotelic activity, play is also an intrinsically rewarding activity. Neither games, nor sports, however, have to be instances of playing. Thus, the rules that constitute games should rather be seen as something that enables the game to be played without necessarily implying a breaking of the game itself given its constitutive rules are broken. Instead, the argument can be made that since games are made by humans for humans, their constitutive rules should be rather seen as serving the function of enabling the game and further as creating a challenge for the players that is 'just right' in order to be an engaging, difficult, yet achievable contest. This tenet will be followed here as well, and a game's constitutive rules and the inefficient means it prescribes are seen as providing the framework of a challenging activity enacted for example in the form of a contest or performance.

2.3 The Magic Circle: Games and Virtual Reality

An important concept to engage with the structuring force of games on experience is that of the *magic circle*. It is first mentioned in Huizinga's work, where it describes the ordering

function of play as creating ‘temporary worlds within the ordinary world, dedicated to the performance of an act apart’ (Huizinga 1998, p. 10). This is taken up and further explicated in the work *Rules of Play: Game Design Fundamentals* by Katie Salen and Eric Zimmerman (2003) as they engage with the play concept in order to provide an extensive framework for a critical exploration of games, as well as the practices of game-design. Importantly, their adapted definition rests upon approaching games as *systems*, a concept originated by Ludwig von Bertalanffy (1972). In their study of games as systems designed with specific intentions, Salen & Zimmerman take up Stephen W. Littlejohn’s (1989) definition which postulates four essential constituents of a system: The *objects* (or variables, parts, elements) that are part of the system in question. Its *attributes*, which describe the properties, or characteristics that the system's objects hold. The internal *relationships* and *interactions* between objects in the system and lastly, the *environment* a system is embedded in and with which it also interacts (Littlejohn 1989, p. 41). The conceptual dimensions along which something is considered as a system are rather diverse, as definitions can refer to different dimensions of analysis: E.g. Defining a system on a purely formal, rule-based, or even mathematical-logical level, but also on an experiential, social or cultural level. Depending on their dimension these definitions will also consider and emphasize different variables as constitutive of the system (Salen & Zimmerman 2003, p. 51). Further, these dimensions can also be ordered in cross-reference to each other. For example, games as a purely rule-based system could be integrated into games as an experiential system by integrating and expanding the former and including the ways players interact with these rules. Salen and Zimmerman use the approach of systems theory to conceptualize games as self-contained systems and, based on this, provide an analytical access point to explore the change in holistic experience when entering such a *game-system*, that is: the process by which one transgresses – in a spatiotemporally limited manner – the boundaries of ‘ordinary life’ by entering the *magic circle.*

Essentially, a game, when it is played, situates a frame which ‘protects’ the world of play from the outside, ‘ordinary’ rest of the world. This conceptual frame situates many of the processes that delineate games from the rest of reality but also the processes taking place inside the magic circle and the game itself as it is formally structured and individually experienced. In ‘pure play’ (Huizinga 1998, p. 197), the boundary between play and not-play is fuzzy, that is, the transition between behavior that is play and that which is not can be gradual and ambiguous. It is the introduction of a structured, rule-governed frame that cancels out this ambiguity and constitutes a clear distinction between playing a game and not playing

a game – all true participants of a game will know that they are playing it: A game has a clear beginning as well as a defined end, and players are continuously aware of and monitoring its frame and when it is entered and left, respectively starting and ending the game (Suits 2005). Thus, the term magic circle describes this clear boundary between the context of a game and the world beyond, or outside of it. While it encircles a special place in time and space, it remains embedded in the 'ordinary world'; it '[...] inscribes a space that is repeatable, a space both limited and limitless. In short, a finite space with infinite possibility' (Salen & Zimmerman 2003, p. 95).

As the magic circle demarcates the space for a game to take place in, it does so by way of game-specific boundaries or boundary objects – i.e., the *playground*. Importantly, by themselves these boundary-structures are idle and do not constitute a game yet. They are mundane, material objects and spaces that only become active as constituents of a magic circle as they are engaged with as such by the player(s) of a game (Star 2010, pp. 602-603). When this happens, however, there emerges a reciprocal relationship between players engaging with the playground which, in turn, makes the game possible by its mediation of interaction. This also changes the playground from an ordinary material artifact or demarcated space into the 'world of the game' in which the specific objects and players have to move and arrange, or be moved and arranged, according to the rules of the game. It is, thus, the lusory attitude together with the material and metaphysical characteristics of a game's respective playing-ground that define the magic circle and situate the game as distinct from, yet referring to, the reality that is outside of the magic circle (Salen & Zimmerman 2003, pp. 96-98).

It is important to keep an awareness of the fact that despite its transformative power to create alternative realities, the magic circle is always embedded in – and part of – ordinary life and reality as is. The magic circle should not be seen as a clear-cut boundary between reality and the game, but as a conceptual tool in order to effectively explicate and analyze the distinct forms of experience that are at play in games (Zimmerman 2012). In fact, an embeddedness in the 'real world', actually grounds the rewarding characteristics of the challenges provided by formal game rules. Games are made by humans for humans and, as such, always speak to embodied and applied forms of knowledge and practices (e.g. some form of athletic, spatial or mental activity). This becomes evident, for example, in contemporary high-risk and extreme sports which are characterized by the voluntary exposure to potentially dangerous and even life-threatening environments. Similarly, many video games rely on a simulation of such

environments, aiming for a maximum of immersiveness in a simulation of this sort while minimizing the actual hazards that such an environment would contain were it not simulated. Conclusively, the magic circle describes the material, symbolic and attitudinal structures that create the virtual world that is experienced in playing a game. As such, they are the boundary-structure that clearly separates play and non-play.

Concludingly, play and games are domains of activity and experience that stand in close relation to but do not necessarily always presuppose each other. Play and games share much in their underlying structuring capacities, most notably the lusory attitude. The theorization of play and playing games will serve to enable an analysis of the specific domains of video games and of 'traditional' sports in comparison, and for their shared aspects in the underlying capacities to restructure the experience of the world through their constitutive rules (Kretchmar 2015, Suits 2005). An important aspect in this is how it transgresses the boundaries of 'ordinary life' by creating an alternative, virtual reality which yet remains embedded and part of reality as it is experienced normally – the magic circle (Salen & Zimmerman 2003). This is most prevalent in the intersection of play and games and essentially provides a designable and intrinsically motivating framework to engage with and attempt to overcome challenging environments.

3 Sports, Video Games and the Media Convergence

This chapter will focus on the specific value of games as an overarching concept to design environments that afford and promote the acquisition of specific experiences, challenges and, subsequently, also skills and skill-sets. It will further situate the domains of classical sports and video games in an ongoing experiential convergence which is mediated by a digital transformation of our world and the practices and epistemologies through which reality is experienced. It will also formally introduce the case studies for this work: Two 'traditional' sports – *snowboarding* and *MMA*– , as well as two video games – *Elden Ring* and *Monster Hunter World: Iceborne*.

Since the beginning of the ongoing digital revolution, there is an ever-increasing amount of digital devices, infrastructures and experiences that are part of human society and culture as a whole (Stengel et al. 2017). Today, throughout wide parts of the world, the access to virtual, shared spaces enabled by computing and information technologies results in a globally connected, cultural, sociotechnical landscape (Terranova 2004). This not only implies fundamental changes in how societies as a whole are constituted but also in how individuals experience their environment. The domain of video games, for example, owes its emergence and existence to the widespread availability and accessibility of computing technologies. In Europe, over the last decades, video games established themselves alongside other dominant modes of media production and consumption, such as the film and music sectors[2]. Similarly, the culture and practices around games predating the digital transformation are themselves also subject to this ongoing transformation: The digital transformation is increasingly mediating the enactment, experience and consumption of 'traditional' sports. This is again mirrored in the amount of academic work and discourse across a broad range of disciplines engaging with the transformative processes that digitalization brings to all aspects of human experience (Lanfredini 2023).

It should be clear that playing a video game will make for a fundamentally different experience than practicing a traditional sport regarding material environment and playing field, range of action and forms of embodiment and overall demand in physiological capacities and resources. Playing video games is mostly enacted in a seated position in front of a monitor, while focusing on and engaging in fine motor-movements of the hands and

[2] Yearly Report of the German Games Association 2023, pp. 12-14
https://www.game.de/wp-content/uploads/2024/08/Jahresreport-der-deutschen-Games-Branche-2024.pdf

fingers which are recorded through an input-device and then fed back into a virtual environment and translated into actions therein. Traditional sports, on the other hand, mostly require a physiologically demanding engagement involving the body as a whole including the coordination of motor skills to the end of a challenging athletic performance. Despite these differences (which, upon closer inspection, can also be made between both, different video games and different types of sports respectively), there is a considerable amount of academic work on video games experiences that are situated as paralleling the qualities experienced in traditional sports and which also explore whether video games should be seen and practiced as sports under the notion of *e-sports* (electronic sports) (Parry 2018). Some of these discourses include questions to what extent esports involve the refinement and application of physical and motor skills (van Hilforde & Pot 2016), or to what extent the simulation of existing sports in video games is comparable to their analog counterparts (Conway 2016), and, in how far video games in general – just as traditional sports – should be viewed as embodied practices which are not outside of the material world (Holt 2016). Others explored the ways in which video games become, over time, institutionalized as competitive events that are also consumed as entertainment much like in traditional sports (cf. Hemphill 2005, p. 199); or the role that mass multiplayer online role playing games (MMORPGs) play in the formation, expression and reflection on personal identity (Edgar 2016). This chapter conceptualizes video games and sports as subject to a digital transformation and subsequently as converging along the progressing entanglement between the analog and the digital, enacted through the mediation of information and computational technologies.

3.1 Sports 2.0: The Digital Convergence of Sports and Video Game Cultures

In his book on new media in traditional sports cultures, *Sport 2.0: Transforming Sports for a Digital World* (2017), Andy Miah provides an extensive analysis on the specific practices and forms of sport that have been transformed with the introduction of digital technologies. He describes the increasing institutionalization of video games and digital culture as paralleling the institutionalization of sports. Essentially, Miah conceptualizes both sports and general digital culture as increasingly, mutually co-constitutive and converging. In the academic discourse, this is discussed bidirectionally: On the one hand, digital experiences in general gain more physical characteristics (Mattern & Flörkemeier 2010) – for example, through human-computer interfaces that encompass increasingly many sensory modalities and involvement of bodily movement, like VR and AR devices and applications. On the other hand, practice and training in classic sports feature an increasing amount of quantitative

measurements of athletic performance – for example, through wearables and other real-time tracking devices (Browne et al. 2021, p. 3).

Despite games being mostly described as 'leisure time', contemporary scholarly discourse emphasizes the importance of their impact on life outside of them. The impact games hold in playing a social role should, therefore, not be dismissed as inconsequential on the basis of the non-instrumentality inherent to them. In fact, it is precisely their characteristic of replacing the ordinary that signifies their function in human culture. Sports, for example, in testing a specific form of mental and bodily practice and activity, are one of many ways to understand, engage with, and develop a personal sense of one's own embodiment. They are, therefore, also an expression of biopolitics as institutionalized, cultural practices and in their prescription of specific values and ideals of health, ableness and physiological capacity (Miah 2017, p. 30). Similarly, the spaces that are embedded with – as well as the ones that are created through – digital technologies are fundamentally impacting and transforming how we experience, make sense of, and enact reality. This ultimately leads to a blurring of the distinction between what we understand as virtual – in the sense of a seemingly 'unreal', digital environment – and analog, corporeal experience. More important for this specific work, digital environments also start to dissolves boundaries between the experience of playing video games and ordinary life in a similar way as sports do: Not only are contemporary video games institutionalized as competitive, sports-like events enacted by professional players – or 'e-athletes' –, the video games industry has an extremely lucrative sector in new media (Miah 2017, pp. 93-97). On an infrastructural dimension and although digital environments often are experienced as – in a way – immaterial, they demand a lot of actual material resources to sustain them, for example, the running and maintaining of server farms demands for high energy consumption and a great number of raw materials, or the resources scarcity being exemplified by the global race for efficient semi-conductor and chip production (cf. Goralski & Tan 2020; Kopka & Grashof 2022; Zhang et al. 2024).

Computational technology today permeates most aspects of everyday life, from financial and economic practice over global communication and logistics, to interpersonal engagements and communication. Computational modeling and simulation shape contemporary scientific knowledge production in general, their socio-technical mediation is crucial to research as it is practiced today. Games and subsequently sports as specific domains of practice are no exception from permeation: Video gaming as dominant aspect of digital, popular culture evolved from its first instantiations with relatively crude and simple mechanics and input

devices and with an ever-increasing processing power of modern computers to the sophisticated simulations of classical sports that exist today. At the same time, video gaming itself is increasingly entangled with other dimensions of digital media (e.g. being seamlessly integrated in social media platforms such as Facebook), as well as the non-digital, physical aspects of our daily practices (like the augmented reality game Pokemon Go). As much as they are a market in general, specific video games themselves often contain whole economies inside of them, also permeating and being permeated by each other, with in-game markets constituting parts of the economies external to the game and vice versa (cf. Torhauge et al. 2021, Khorsandi 2023).

Historically, video games are introduced into our lifeworlds by way of digital technology. As such, they are made possible by computers in the first place and, which the culture of games by introducing new modes of game playing and virtual playgrounds (see 2.3 ‘The magic circle’). Sports, on the other hand, existed already before the introduction of digital technologies. Nevertheless, in wake of the digital transformation, the domain of sports culture specifically with regard to its broadcasting and marketization for entertainment is under constitutive and ongoing change. Interestingly, one of the more lucrative instances of this is the licensing of sports video games as intellectual property, allowing a whole range of governing bodies of traditional sports to periodically release new versions of ‘the same’ video game, as for example with the game titles ‘FIFA’ or ‘UFC’ developed by *Electronic Arts (EA)* and in cooperation with the respective governing bodies of the real-world sports leagues (i.e., *Fédération Internationale de Football Association (FIFA)* and *Ultimate Fighting Championship (UFC)*)[3]. These games are not only a profitable and sustainable source for revenue as the games they are but, at the same time, advertise the real-world sport, leading to a mutual increase in demand for both (Miah 2017, p. 35).

In the previous chapter, I conceptualized play and games in general as ‘virtual’, or ‘alternative’ realities with permeable boundaries. In this chapter on the other hand, I aim for a conceptualization of digital culture, not merely as constituting new forms of spaces and, hence, alternative, virtual realities but also as transforming most aspects of societies and individuals' experience, including those of games and sports. At the same time, games and sports also have, as strong of an impact on how the digital transformation unfolds, in their own right: For instance, in the previously mentioned ‘franchising’ of popular sports in the

[3] see EA: https://www.ea.com/de-de (Retrieved 11.04.2025), FIFA: https://www.fifa.com/de (Retrieved 11.04.2025), and UFC: https://www.ufc.com/ (Retrieved 11.04.2025)

form of yearly released video games which subsequently are one of the most productive and profitable genres of video games. Essentially, this situates a simultaneous and co-constituted transformation of amateur, professional and spectator experience in institutionalized sports (Miah 2017, p. 81), it describes a shift from physicality into digitality of an increasing number of aspects that are present in traditional sports (*ibid*., p. 70), and, finally, it characterizes the constitution of video game culture by the same processes, epistemologies and actors that constitute sport and movement culture (*ibid*., p. 99). This complicates approaching digital cultures and sports as two clearly distinct complexes even in the physical corporeality that is often held up as the most important characteristic of classical sports in differentiating itself from video games and other digitally mediated experiences. The introduction of devices that digitize aspects of sports and training reconfigures how athletes know themselves and their performance (e.g., wearable performance monitoring devices), how rules are enforced in competition (e.g., slow-motion cameras to retrospectively analyze a game) but also how and through which formats it is broadcasted and made available to the public as consumers (e.g., on a streaming platform instead of television). Otherwise, in the domain of video games, there are professional players (i.e., playing video games for a living) spending their working time training in the respective game(s) they play. Similarly, they compete in institutionalized forms of contest for prize money which are publicly broadcasted in the same way and through the same digital media as classical sports are.

A major factor in a seamless experience of digital environments are the material interface devices that enable access to – and navigation of – digital spaces which increasingly cater also to physiological engagement. Although technological artifacts such as VR glasses are only starting to become a viable and privately affordable technology (Kaplan et al. 2021), digital culture seems to develop toward a haptic trend which increasingly integrates a broader range of human physiological capacity for movement and action, in turn also leading to a more seamless integration of virtual aspects into everyday experience (Kim et al. 2021; Wang et al. 2021; Jung et al. 2021). This is also mirrored in the imaginaries surrounding virtual reality today versus the early years of the internet: Back then, the notion of cyberspace was the most common concept for imagining the future of life online, and it still grounds the idea of digital spaces as separated from analog ones. In contrast, contemporary imaginaries of the digital future turn away from such enclosed cyberspaces and rather envision a physical world in which more and more digital aspects are integrated, resulting in a digital scaffolding as an additional layer through which we experience our world, digitally as well as analog (Miah

2017, pp. 41-42). At its core, an immersive environment – digital or not – is constituted in a particular relationship between subjective experience and the role that the use of technological artifacts plays in them. In much of popular culture and in some academic discourse this relationship is often framed in a techno-deterministic understanding (i.e., as either taking away or enhancing some inherently human capacities) (cf. Loh 2018). Others explore the meaning of specific technological artifacts for society as a whole, the economy of the production and the distribution of knowledge (Boutang 2011), and individual sense-making and experience (Mager 2017). This work will situate the use of technological artifacts together with societal life and experience as neither determining nor being determined by each other. Instead, technological-material artifacts, individual experience, and societal practices and structures are in mutual co-constitution (Jasanoff 2004).

Both, sports and video games are grounded through and enabled by the use of specific technological artifacts. At the same time, the structures and material forms taken by these technological artifacts are shaped in such a way that they correlate to our bodily capacities and abilities (Gibson 1979; Verbeek 2005, p. 44). While technological artifacts are designed according to existing bodily capacities, they also prescribe a certain way they are intended to be used, how they can and should be handled, and, therefore, shape the experience of the individuals engaging with them (Akrich 1992). The sociotechnical aspects of technology in human practices and experience, as well as the embodied practices they co-constitute, are – in academic discourse – often approached refuting a hard distinction between humans and specific technological artifacts regarding the agency of both. In essence, this means that technological artifacts are never merely used but they actively shape human forms of knowledge, experience, culture and the environment as a whole and, as such, also possess a certain agency. As I will analyze specific phenomenological aspects that characterize both sports and video games, it is important to keep an emphasis on the particular ways in which human experience and lived practices shape and are shaped by the technological devices that surround us. Specifically, it is to explore how certain experiences are afforded and facilitated by sports and video games. The concept of postphenomenology (Ihde 2009) approaches this by analytically focusing on the meaning of specific technological artifacts with an emphasis on the ways they shape and are shaped by subjective, embodied experience. Specifically, postphenomenology aims to bring to terms the phenomenological tradition with the 20th century, poststructural turn in the philosophies and social sciences. As such, it expands the phenomenological tradition with an acknowledgement of the role of sociocultural,

technoscientific and historical situatedness of subjective experience (Haraway 1988). It does so, by taking a step away from claiming a primacy of subjective experience as ontologically primary to other forms of knowing (Heidegger 2006).

Ihde (2012) conceptualizes technological artifacts not merely as passive objects without agency, but as actively shaping how reality is brought forth in experience. Both, subject and object are co-constituted in specific, situated and dynamic mediation of each other. This also implies that the 'same' technological artifact can be constituent of different forms of experience and vice versa, depending on the situatedness of the individual engaging with it. The realities emerging in an engagement with a technology should, therefore, be seen as multistable, that is, as affording different forms of experience. Postphenomenological analysis engages with specific human-technology-world configurations of this sort by concentrating on three dimensions: 1) Specific form(s) of bodily practice involved in the use of technological artifacts, 2) the material constraints and affordances of the involved technological artifacts, and, 3) the sociocultural situatedness and historicity of the specific context of the configuration. Further, these dimensions do not unfold and exist independently of each other but are all in mutual co-constitution, dynamically changing over spatiotemporal dimensions (Rosenberger & Verbeek 2015).

Both, video games and traditional sports as sociotechnical configurations are, thus, constituted by the subjects while simultaneously constituting the subjects situated in them and, by this, make possible the enactment of a specific form of an experiential reality. All games – video and sports – can be seen as constellations of technologies, logics, and rule sets that are designed to correspond to the capacities and abilities of human players to create a 'just right' challenge: They are made by humans and in order to be played by humans (Kretchmar 2015). This fact is what makes both sports as well as video games – even though by different means of technical-material implementations and mediation – catalysts for experiences like flow (or any other experience, the game in question is designed for). In conclusion, both sports and video games feature a complex interplay between human bodily practices and their co-constitutive relationship with the use and enactment of technoscientific knowledge. Considering this relationship more specifically and under the light of a digital media convergence, both sports and video games are increasingly experienced and practiced in similar ways.

3.2 Case Studies

Up to this point, my argumentation concerned games, sports and digital media as general phenomena. To gain a more complex understanding of the human-technology-world relations that can constitute sports and video games, the following section will introduce the specific cases of analysis: Two traditional sports (*Mixed Martial Arts* and *snowboarding*) and two video games (*Monster Hunter Wilds* and *Elden Ring*). Given the scope of this work, the following descriptions should only be taken as a rudimentary outline of the most important dimensions rather than as a comprehensive description of the respective game itself.Following the methodological framework of postphenomenological analysis, the next section will introduce and describe the specific sports and video games that will serve as anchor points to explore the human-technology-world relations they situate and as the experiences they can and cannot afford.

3.2.1 Elden Ring

Elden Ring (ER) is an action role playing game (ARPG) created and released 2022 by the Japan-based video game development studio FromSoftware[4] in collaboration with George R.R. Martin, the creator of the *Game of Thrones* book-series[5]. In-game events take place in *The Lands Between*, a decaying world in which the player-character, only called a Tarnished, is tasked with restoring the order of the gods. In the game, the player, as the main character, explores a broad fantasy landscape, figuring out the history of the game world and defeating enemies, with the final goal being the restoration of peace. It is the most recent implementation of the ‘Soulslike’ video game genre for which the studio is renowned. That is, FromSoftware is a critically acclaimed studio which is most famous for a particular game franchise: The Dark Souls trilogy, the eponymous name of the genre *Soulslike*.

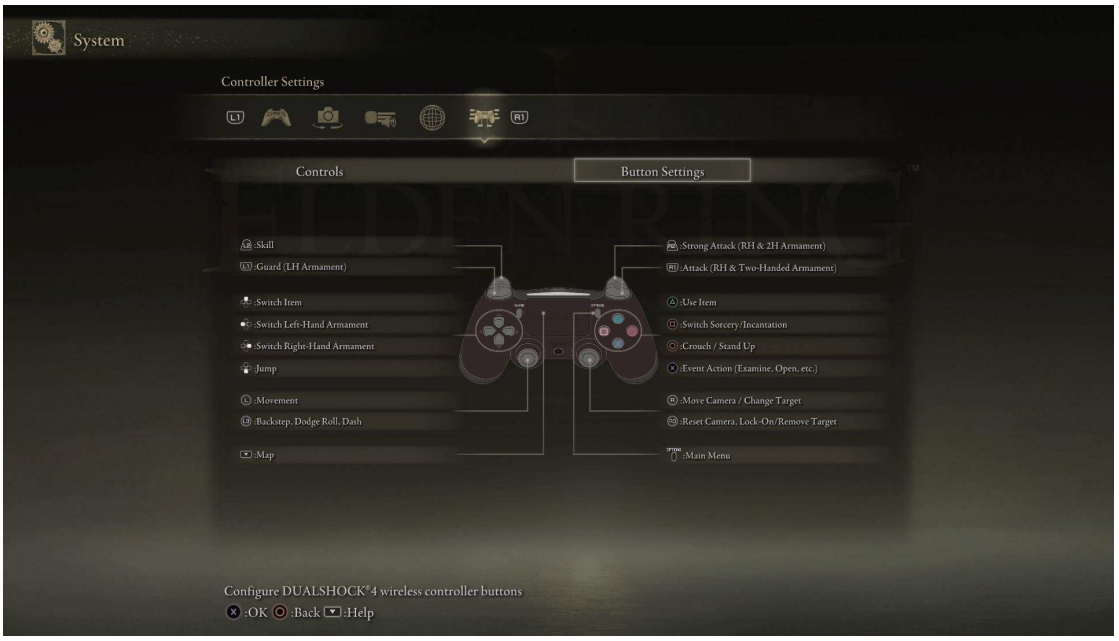
Generally, video games of the Soulslike genre are characterized by a very high – often even frustrating – difficulty and a form of implicit storytelling which in contrast to a directly narrated story embeds information about the in-game world, such as, for example, its history and lore, in the environment of the game itself, i.e., in form of item descriptions, monuments, or optional and missable interactions with in-game entities, e.g. in dialogue with other, non-player-characters (NPCs). The high level of difficulty is incorporated into the gameplay by designing the game such that frequent in-game death and repetition of sections up to whole

[4] see FromSoftware: https://www.fromsoftware.jp/ww/ (Retrieved 11.04.2025)
[5] George, R.R. Martin (1996-ongoing) *A Song of Ice and Fire*

playthroughs are actively incorporated into the gameplay. For example, right at the beginning of the game, players encounter a boss (i.e., an adversarial NPC of increased difficulty compared to usual NPC enemies) that they are almost certain to lose to. Although the boss can be beaten, dying to it the first time makes the player respawn in another location and starts the game's proper introduction to the game, thereby, introducing player death as a fundamental game mechanic right from the beginning. Elden Ring, as the latest entry of games developed by FromSoftware, is also the first game by the studio that features an open world (i.e., an open, freely explorable in-game environment, as in contrast to a linear level design, where players can traverse only prescribed ways) and the option to play together with other real-world gamers (Vella 2015).

Besides the conventional devices needed to play video games (a PC, Laptop or console, together with the corresponding periphery, i.e., a monitor, an audio source, etc.) the game is optimally played with a gamepad (see Fig. 3.1, Image A). After creating a character, players navigate this player-character, who is the protagonist of the story, in 3rd person perspective through the open world where they frequently battle minor enemies or bosses, interact with NPCs, and level up (i.e., increase in strength or ability) their character (see Fig. 3.1, Image B). There is a diversity of character classes that can be played, determining the specific way the player chooses to fight, ranging from a focus on melee (close) combat, to using magic, spells or incantations, all implying different strategies and styles of play. Combat, in general, is one of the main focuses of the game and also the characteristic making the game so difficult as the combat interaction is very unforgiving and often requires a lot of time to master. Players collect an in-game currency for defeating enemies which can be redeemed for improvement of the characters abilities at checkpoints that are sparsely distributed in the world. Upon dying, however, all of the currency collected up to this point is lost, thus, incentivizing a thoughtful management of collecting currency and spending it in due time in order to not lose it by dying (Bycer 2024).

A



B

Figure 3.1: Gamepad with movement schema and gameplay impression for Elden Ring. (A) The button and respective action distribution with the gamepad in the game Elden Ring. (B) An exemplary view of how the game is experienced by the player, in this instance, the first boss of the game. (Source: Screenshots taken by the author from the video game *Elden Ring* (2022))

Players are confronted right from the beginning with a multitude of opaque and non-transparent historical and sociopolitical relations in the game world which are never conveyed or explained directly. This also extends to the actions of the players themselves: While they know their task, that is, to restore the world's order by becoming Elden Lord, it is never made explicit what this implies, means, or how exactly it is to be accomplished. Choices offered to the player are usually also tied to unforeseeable consequences, often to

detrimental effect to the players surroundings or other in-game characters. Even with the multiple endings the game offers (depending on the optional quest lines the player finished), it never becomes clear if the outcomes of the players actions are of a positive or negative effect. Thus, players have to construct and assemble the history, politics and, ultimately, the meaning of the overarching story by themselves and by actively and continuously interpreting the circumstances, people, and events they encounter and interact with in the game world. Essentially, the game – rather, than just telling a linear, yet interactive story to the player – treats players as part of the game world, an internal actor to whom the game affords knowledge of this world mainly by embedding it in the different ways the player engages with it (Hines 2024, p. 1076).

Lastly, this not only creates an immersive in-game world in which players' choices and actions actively shape how this world unfolds, it also gives rise to a broader community external to the game-world itself as the construction, assemblage, and interpretation of in-game history, politics, and epistemologies is a large part of a specific online media discourse (e.g., in the form of video essays interpreting the game) and, by this, also constitutes a community that, while it remains invested and engaged with Elden Ring as such, is situated outside of the game-world and in ordinary life, and is the basis for social interaction beyond the game itself (Ball 2017). Thus, Elden Ring and, per extension, the whole Soulslike genre besides their particular playing experience also constitute the basis for a thriving online community involving social engagement between fans and players, players and the game-world, as well as a plurality of opinions and interpretations that take part in the construction of the in-game world and story (Kayali 2019).

3.2.2 Monster Hunter World: Iceborne

Superficially, Monster Hunter may, gameplay-wise, appear strikingly similar to Elden Ring. Both games fall under the genre of ARPGs and both feature complex and dynamic combat at the core of their gameplay. While the combat in Elden Ring is rather fast-paced, as the boss fight against Malenia – being just under 5 minutes in the mean – has shown, a single quest in MHW has a time limitation ranging between 30 and 50 minutes. Instead of navigating an open world, the player accepts and takes on quests that take place in a variety of closed off environments with specific ecological themes (e.g., an ice, jungle, or desert biome). If not in a quest, the player is situated in a camp, in which they can forge and upgrade weapons and armor, buy equipment, prepare for and accept quests. While in MHW every quest can be done alone (i.e., in single-player mode), however, one of the biggest draws of the Monster Hunter

series is the uncomplicated, easily accessible option to take on quests together and in cooperation with up to three other players. In *Monster Hunter World: Iceborne* (*MHW*) players hunt large dinosaur- and/or dragon-like monsters in a diverse range of different ecosystems. Most games in the monster hunter series, like FromSoftware's Soulslike titles, fall under the genre of action role-playing games (ARPGs). Like many games of the genre, MHW is also optimized for and best played using a gamepad as input device (Fig. 3.2 depicts a typical gamepad, with other games featuring similar layouts, in image A). Monster Hunter World (MHW), being released in 2018, is part of a similarly popular game franchise, the Monster Hunter series featuring 27 titles (including several remakes of existing titles for different platforms) and developed by the Japan based publishing company Capcom[6].

The game-play is dominated by fighting against (single) large monsters without the necessity of reaching a specific goal to end the game as the story elements only play a minor role, instead, the emphasis being on the fighting system and a rewarding gameplay-loop of hunting monsters to obtain better equipment which in turn enables to hunt stronger monsters and so on. While the early entries in the series were critically well acclaimed by Western audiences, they were commercially relatively unsuccessful in European and the US markets. MHW, being specifically designed to appeal to global audiences, indeed, succeeded in this regard as it became the company's best-selling game and continues to be so even nowadays – while not being the most recent entry in the series. In 2020, the expansion pack for MHW was released, adding a substantial amount of content to the game. In general, MHW features a total of 14 different weapon types, each with their own, unique playstyle. The styles of play afforded by these different weapons enables fundamentally different gameplay and experiences through the introduction of different movesets and weapon-specific resources that are increased if using the specific weapon skillfully and in its intended way (i.e., in fulfilling its 'weapon goal'). The challenge that is in this form of combat gameplay is the sparsity of attack opportunities and the need to act defensive and highly selective with your own attacks (Josh 2019).

[6] https://www.capcom.com/

A

B

Figure 3.2: Fighting a monster in MHW and equipment upgrading. (A) The player character has drawn their weapon, the gunlance, in a training area. On the left side of the screen, several possible attack combinations are shown. (B) The menu for creating a new set of armor gives an impression of how extensive the equipment and weapon preparation is part of the game play experience. (Source: Screenshots taken by the author from the video game *Monster Hunter: World – Iceborne* (2019))

In contrast to other ARPGs, games of the Monster Hunter series most of the time feature almost no substantial story and, if they do, only as a framework to situate the gameplay in a somewhat more immersive environment. Instead, the emphasis in the Monster Hunter series

lies very much on fighting and improving the in-game tools players possess (first and foremost, weapons and armor). While it can be played alone, one of the games biggest appeals since its first releases is the possibility to cooperatively play together with other people online. Player-characters do not become stronger over time in terms of their in-game characteristics. Instead, the specific strengths, fighting styles and attributes are wholly constituted by the equipment – weapons, armor, decorations and consumable items – worn by the player-character. Thus, equipment is chosen with respect to the monster that is hunted before starting a given quest or mission. Players usually start from a ‘gathering hall’ where they can post and join others' posted quests. A quest mostly consists of finding and slaying or catching one or several monsters together and in cooperation with up to three other players.

Usually, a hunt consists of four phases: Finding the monster, fighting it, pursuing it to other areas if it flees and finally slay, or capture it. During most of the fight, the monster is in control of what happens and players have to carefully evade, defend and strategically attack, as falling unconscious is highly disincentivized and results in decreased rewards or even failing the quest. In completing a mission, the player receives a reward in form of in-game currency as well as rewards from the slain or caught monster. These rewards are then used to create better equipment which, in turn, again allows the player to hunt stronger monsters. This behavior creates a so-called *compulsion loop* of taking on difficult challenges and, through the gained rewards, being able to engage in more difficult challenges and receiving even greater rewards (Bycer 2019).The mission system is also part of a broader ranking system that determines which quests are available to the player, whereby higher-ranking quests offer better materials from monsters or give access to new monsters that were not available in lower ranks. The higher-ranking missions, on the other hand, can be very difficult and unforgiving, with monsters often being able to defeat player-characters in a single or only a handful of hits, even wearing the highest-tier equipment. These high-ranking missions often have to be attempted over a long period of time before players manage to succeed in them and, even if they do, they do not necessarily get the rewards they need to upgrade their equipment as the loot (i.e., the treasure or material received) from monsters is, for the most part, randomly generated. The combat focuses heavily on the dynamic and strategic management of resources, including the life points and stamina of both the player-characters and the monsters, as well as – depending on the weapon used – different modificators to the damage output and opportunity. In contrast to Elden Ring, however, and as implied by the rather long time limits for the quests, combat – or rather, a hunt – is spatiotemporrally more

drawn out. Interestingly, this is despite Elden Ring featuring an open world and, therefore, much more in-game space to traverse, where Monster Hunter – per quest – features only an arrangement of areas, which are seamlessly connected, but yet do not form a freely traversable open world. Upon starting a quest, the player(s) spawn in one of these areas and, then, have to find and slay a specific monster – which will retreat to other areas several times during the hunt.

Despite this emphasis on in-game objects and equipment as a motivational core aspect in the game mechanics, the challenge in hunting a monster in-game mainly lies in the player's skillful execution of the actions of their in-game character. MHW features a range of 14 weapon archetypes the player can use, each featuring different movesets, attack combinations, buffs and debuffs, different levels of effectiveness on different body parts of monsters, as well as between different monsters in general. Subsequently, each weapon affords a different style of play, different fighting strategies and capacities. MHW is also the first entry of the Monster Hunter series in which players were able to change their weapon mid-quest, although only by returning to a base camp at which the quest had usually started. MHW famously features the gameplay mechanic of *animation priority*, which means that once the player has pressed a button starting an action sequence or attack with the respective player-character, the in-game action animation will play out and it cannot be interrupted by any further button presses by the player anymore, often leaving their character vulnerable to monster attacks and without the ability to defend or evade. This necessitates players to carefully manage, precisely time and plan the actions they want their character to take together with the keystrokes they give as the input for their player-character to execute.

3.2.3 Snowboarding

Snowboarding is a winter sport that is practiced by the athlete gliding down a snow-covered surface, usually a slope, while their feet are attached to a board made from plastic and/or wood. In 1964, Sherm Poppen, an American engineer – in an attempt to build a toy for his children – created a device for sliding on snow, called the ‘Snurfer’, by fastening two skis together and attaching a rope to hold at the tip of the nose (front) of the board. As this snow toy proved very popular with his children and their friends, he patented the device, thus, setting the foundation for the development of the snowboard. While the snurfer was a relatively crude device, providing little control over the ride, the idea was taken up and developed further by several alpine sports and surfing enthusiasts – most notably Tim Sims, Dimitrije Milovich and Jake Burton Carpenter. By the end of the 1970s and besides a range of

slightly different vehicles, the snowboard had taken on the conventional form in which it is mostly known by today. Following these developments, snowboarding started to be enacted as a competitive sporting event and gained a more broad, global popularity among alpine athletes, amateur, as well as professional practitioners. snowboarding, while historically grounded in general alpine and skiing-culture, is also in contrast with these cultures: While skiing itself is grounded in rural culture and, to some extent, developed out of the necessity to navigate mountain sites in winter, snowboarding is mostly situated as a form of urban, youth or counter culture springing out of similar cultures like skateboarding and surfing (Sisjord 2009). Most notably, by its practitioners, snowboarding is seen as closely intertwined with the expression of individual freedom and adventure, and, thereby, often as opposing the institutionalized and commercialized forms of contemporary sport infrastructure (Loland 2007). Despite this, snowboarding today is thoroughly institutionalized, most prominently as part of the International Ski- and snowboard Federation (FIS) and as an olympic (since 1988) and paralympic (since 2014) discipline. In an equal measure, it is also commercialized,as an adventure sport alongside many others, for example, through sponsorships for professional athletes by Red Bull[7].

In snowboarding, riders essentially instrumentalize gravitational force in the form of the grade resistance on hillsides, and through reduction of friction between the snow-surface and the bottom-side of the snowboard. Gliding down an uneven surface – i.e., a mountain or hill – creates the challenge of constantly monitoring and adjusting body position with respect to the board and the surface the board is on. A skilled rider, then, manages to navigate the hill she glides down, in a way that minimizes energy expenditure in alternating between being in and out of biomechanical equilibrium while maximizing the control over this alternation. As such, it also demands forms of movement patterns that are in contrast with more traditional bodily forms of movement, such as walking, running or jumping – namely, keeping an equilibrium while also sustaining gliding movement: Biomechanically, a body is in equilibrium when all forces acting on it equal out to zero (Synge & Griffith 1949). In a stable equilibrium, the vector of gravitational force of the body points vertically down to the earth's center (see C in Fig. 3.3). The difference in snowboarding from other forms of alpine sports such as skiing lies in the capacity of the snowboard for torsional and longitudinal flexibility and the sideway position practitioners have to assume in riding. The effective range of torsion allows different angles of contact between the boards steel edge and the snow at its tip and nose at the same

[7] https://www.redbull.com/int-en/tags/snowboarding

time which, in turn, allows for making rhythmic turns in the snow with the edge of the snowboard as the only contact point between the snowboarder and the snow itself. It also necessitates a 'sideways' positioning on the board (due to its small width), which characterizes the somewhat unnatural stance and direction of movement on the board.

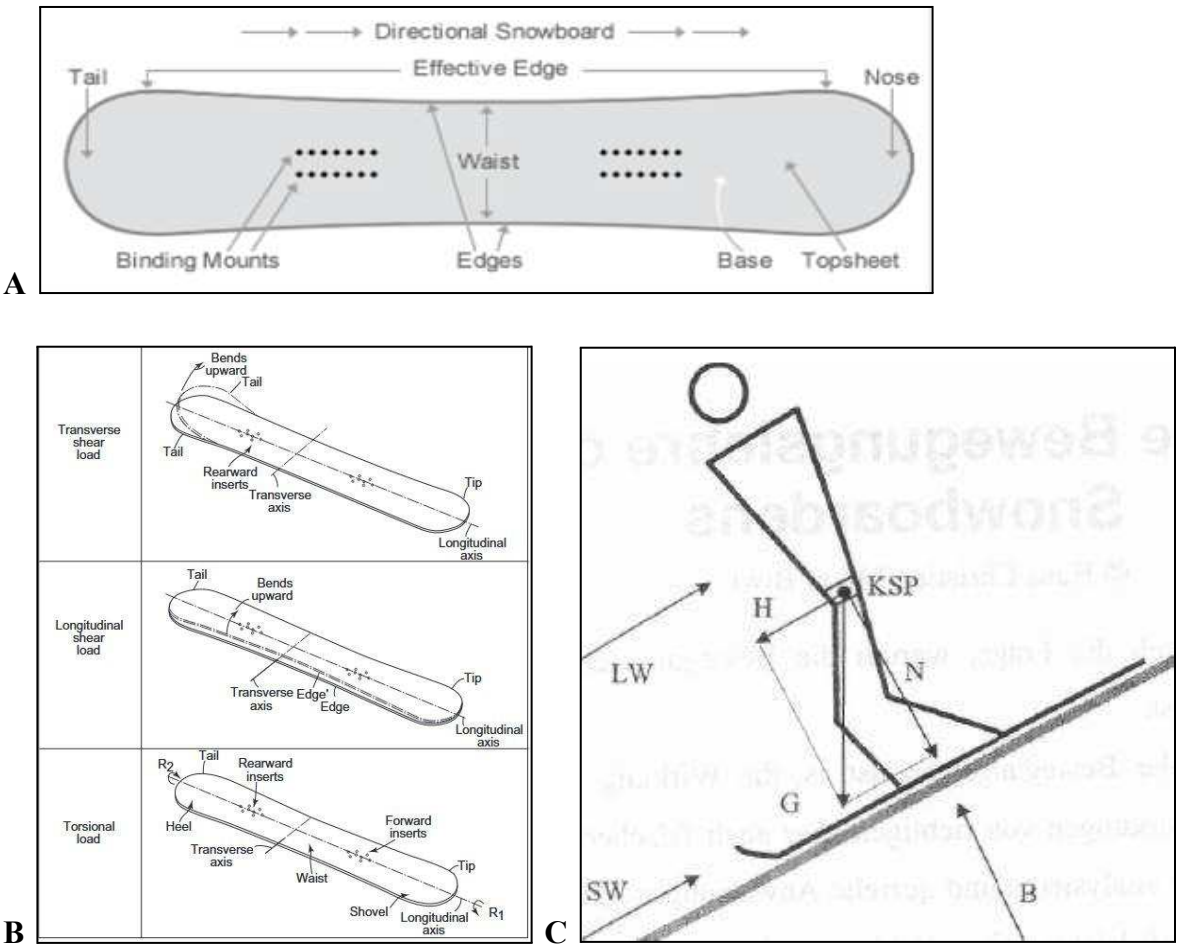


Figure 3.3: Snowboard schema, flexibility and physical forces in snowboarding. (A) Schematic of a snowboard without the bindings depicting the location if its edges, nose, and tail[8]. (B) The directions of flexibility of a snowboard under dynamic load along its different axes (Subic & Kovac 2019). (C) The physical forces at play on the descent on a slope, importantly, with KSP = center of body mass, H = grade resistance force, G = gravity, B = ground reaction force, and N = standard body force (Mitmannsgruber 2008, p. 4).

In order to control the speed and the direction on the slope, it is further necessary to be in control of the contact surface, angle and subsequently friction between different parts of the board (mainly its edges and base) and the snow which is done through the alternating shifting of weight to the toes (and, subsequently, to the *toe edge* of the board) or the heels (and the *heel edge* of the board) (see A in Fig. 3.3). Skillful snowboarding, then, consists mainly of the appropriate execution of these simultaneous, rhythmically alternating action patterns to enact

[8] Source: https://www.mountainsportsofangelfire.com/snowboards.html (Retrieved 11.04.2025)

a fluent descent that also has to dynamically adapt to immediate, very small-scale, environmental changes of the terrain that is traversed. This is possible due to the particular bodily technique and action patterns of the rider and also to the technological-material nature of snowboards. Today's snowboards are flexible in two dimensions: They are under a preloaded tension along their lateral axis, making them slightly concave, while also being flexible enough to bend into a convex form if put under force. Further, they are susceptible to torsion, i.e., they can be twisted along their length-axis. On one hand, the convexly shaped edge in contact with the snow will determine the curvature shaped path of travel, as well as the alternation between toe and heel-side, of the snowboarder. The torsional flexibility, on the other hand, will allow the rider to change angle of the edge-to-snow contact to differ between the nose and tail of the board and, thus, allow them to actively shape their turn radius, speed and direction, in carving and drifting alike in flexing their board more or less torsionally (i.e., by pressing one foot down, while pulling up the other one) (see B in Fig 3.2).

The experience of being in, and keeping the rhythm in keeping the equilibrium throughout alternating curves is manifested in a given rider as feeling of *balance*, which is therefore also situated as the phenomenological counterpart to the biomechanical management of equilibrium (Loland 2007, p. 110). Further, this form of equilibrium is not only constrained – as in made challenging – but also afforded by the gliding motion: Like in cycling, balancing on the edge of the snowboard becomes only possible with a certain amount of speed and is impossible without forward, or downhill momentum. Another fundamental aspect of snowboarding is the constant and rhythmic, yet dynamic alternation between balanced and fine-tuned movements, in order to effectively manage equilibrium, as well as the needed momentum to uphold it. Bodily alignment on a snowboard situates a radical contrast to other forms of sports in its asymmetrical form of bodily alignment with respect to its direction of movement – while riding, snowboarders virtually only ever face downhill with their head and only do so with the rest of their body if they wish to halt on the slope. Regarding the range of skills needed, there are three general dimensions of proprioceptive, bodily control and ability that make up the activity of snowboarding: Bodily position (on the board itself and in relation to the gliding surface), movement patterns, as well as rhythm and finely-tuned timing of movement, which together afford a more or less fluent and controlled descend on the slope. Concludingly, snowboarding consists furtherly of several, sometimes overlapping specializations of particular styles of riding. These, in the later chapters of the thesis, will be further – and together with a range of more specific biomechanical and motor processes that

play an important role – described in the analysis and the discussion, as they are emphasizing different aspects of the snowboarding experience.

3.2.4 Mixed Martial Arts

Mixed Martial Arts (MMA) is a full-contact combat sport incorporating a broad range of techniques from many different combat sports – most prominently, Brazilian Jiu Jitsu, Boxing, Kick- and Thai-Boxing, Wrestling, and Grappling. Historically, such integrative forms of competitional sporting combat are globally found throughout several cultures, for instance, in ancient China in the form of *Lei Tai*, or in ancient Greece in the form of *Pankration* (Brownell 1990). In modern times, MMA was originally conceptualized as a form of competition to determine the most effective martial arts/ combat sport, by letting representatives from disciplines compete with each other according to a set of minimal rules regarding the allowed techniques. This later developed into the modern discipline of MMA, in which athletes simultaneously incorporate and integrate combat techniques from several disciplines into a holistic fighting style. Contemporary MMA is grounded in a convergence of several fighting cultures in the late 20th century such as the Brazilian Vale Tudo fights (Grant 2012), or the Hong Kong rooftop street fighting culture famously being the environment and culture Bruce Lee springs from and which he popularized internationally (Robles et al. 2019). Today, MMA is state-sanctioned and governed – much like in boxing – by fighting promotions, most notably by the Ultimate Fighting Championship (UFC)[9], the Professional Fighters League (PFL)[10] and ONE Championship[11]. It is also institutionalized and enacted as a televised spectacle, digitally consumed for entertainment and as a media event. Particularly, the sports television platform DAZN[12] or watching directly via a digital 'fight pass' for UFC events makes the sport globally accessible, thus, the broadcasted events being competitions that, at times, even rival the pay-per-view sales of the largest boxing events (Sievert 2006).

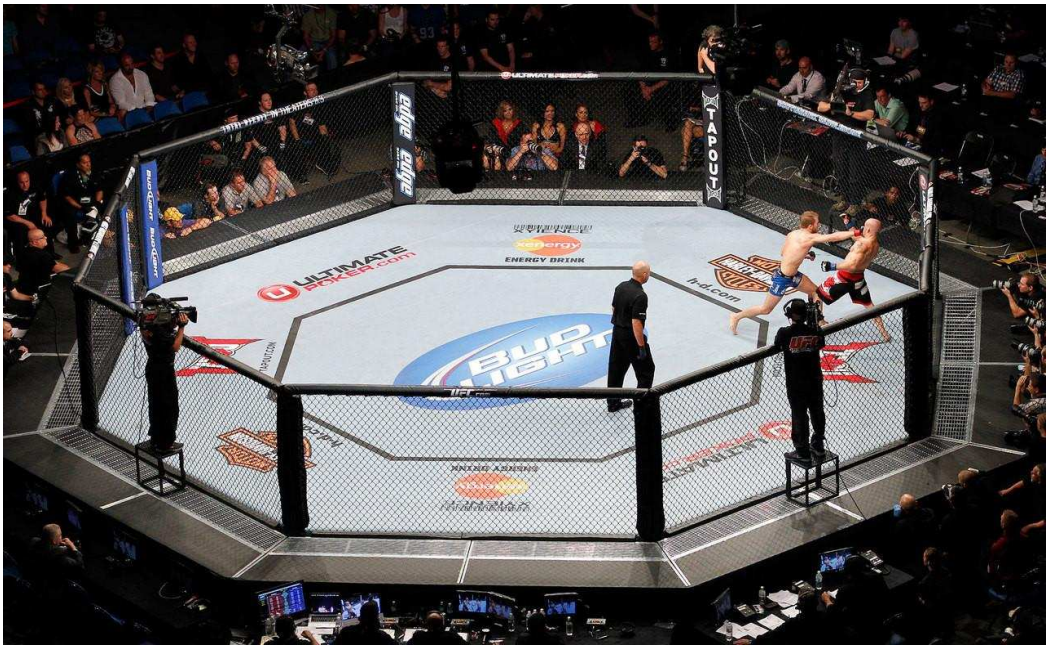
MMA – and combat sports in general – are inherently and necessarily constituted in social interaction (whereas snowboarding can be enjoyed in solitude): It is a direct and violent confrontation between two individuals engaging in hand-to-hand combat, trying to incapacitate or submit each other inside the confines of a *ring* (i.e., often an area laid out with floor mats and in varying size, usually in a rectangular or polyangular shape). In contrast to traditional *martial arts*, which often amount to the practice of athletic choreographic

[9] https://www.ufc.com/
[10] https://pflmma.com/
[11] https://www.onefc.com/
[12] https://www.dazn.com/

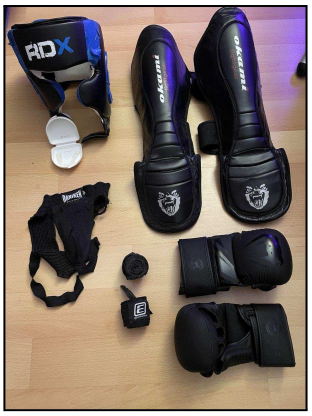
movement sequences, *combat sports* generally need to be trained with a resisting partner. MMA integrates techniques from a range of other combat sports: Most prominently, but not exclusively, these are: *Boxing*, *Kickboxing/Muay-Thai*, *Brazilian Jiu Jitsu (BJJ), Judo,* and *Wrestling*. Practitioners of MMA, instead of specializing in any one of these sports, will attempt to integrate only the techniques most efficient into a single discipline (which is, of course, subjective to a degree). As the general goal is to determine the best fighter independently of fighting style, MMA is a sport that approximates an unarmed fight with minimal rules and, ultimately, prescribes the goal to inflict physical and mental pain to others but also to receive it oneself. In practice, fighting is taking place standing up, as well as on the ground (see image C in Fig. 3.4). Over the last decades and the course of its existence as institutionalized sport, three general systems of moving and fighting have emerged out of the integration of combat sports techniques (Spencer 2012, p. 6): These are the domains of throwing (mostly utilizing techniques coming from the different styles of competitive wrestling), striking the opponent with fists, elbows, feet or knees (with techniques rooted, for example, in Kick-/Thai-boxing and Boxing), and ground fighting and submitting the opponent using a variety of chokes and levers.

Often practitioners of MMA transition into the sport coming from one of its more specialized sub-disciplines. Coming from another discipline of combat sport will, of course, heavily shape and determine the specific style one enacts in MMA which, in addition to the more general exposure to the experience in and culture around combat sports, ease the transition into the sport and enable a variety of individual specializations into fighting styles that combine any of the viable disciplines. It is, therefore, also paramount for the practitioner to adapt their own, already present skills and capacities to fit to the demands that emerge with the integration of additional disciplines with different modes of moving and engaging. Thus, as a Thaiboxer, for example, it would be paramount to learn how to defend against someone with a Wrestling background and keep the fight in a standing position. This makes MMA a field of virtually infinite constellations of individual stylistic predispositions and specializations and, hence, a sport that can be experienced and understood through many individual lenses. Hence, it demands from its practitioners to be able to adapt to an opponent's fighting style. Many MMA gyms will organize their courses as separate training sessions for each discipline, sparring sessions, and more general strength and conditioning units. Practicing MMA thus generally consists of three ways of organizing training sessions: Training techniques, exercising and conditioning for strength and endurance, and simulating

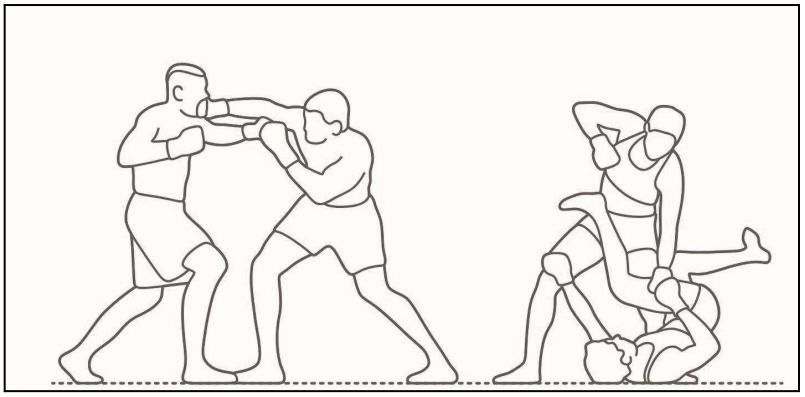
fighting, or *sparring*[13]. While each session will start with a warm-up and getting mobile, the different forms of training fundamentally differ in their form of bodily engagement and activity, devices used and instrumentalized, as well as experience in enacting training. All of them are to teach the practitioner various ways of knowing one's body, knowing how to move one's body appropriately and how to further develop these capacities in a meaningful way.



A



B



C

Figure 3.4: Ring, equipment and common positions in MMA. (A) The dimensions of the octagon in a professional fight (the MMA ring)[14]. (B) The protective gear worn fighting (left to right, top to bottom): headguard, shin-protectors, mouthpiece, cup, and fingerless gloves (Source: Photograph of the author's equipment). (C) The two common fighting positions in which combatants find themselves: Standing or on the ground[15].

[13] simulating a free-fight, with additional rules in place to minimize risk of injury (i.e., a 'mock' fight)
[14] Source: profightshop.com/pro-mma-30-x-30-official-octagon-mma-cage-complete (Retrieved 11.04.2025)
[15] Source: www.dimensions.com/collection/mma-mixed-martial-arts (Retrieved 11.04.2025)

Over the last 30 years and with its growing regulation, institutionalization, marketization, and popularity, MMA also transformed from a contest of disciplinary specialists into one where athletes have to integrate a variety of disciplines into their repertoire at once, resulting in a hybridization of fighting styles. Further, the technical, kinaesthetic and strategic knowledge in the sport dramatically increased, not least through the establishment of dedicated training camps and the capacities for global exchange of information. Especially the contemporary culture around social media platforms like YouTube is – like in many other sports – grounding very active communities of practice (Wenger 1998) in which this knowledge is circulated and transformed, for example, in analysis and commentaries of the recent fights, tips and instructions for training, as well as critique on the structure and governance of the sport as a whole – by spectators, amateurs and professional athletes alike (Vaittinen 2014). Accordingly, the ruleset of the sport also significantly changed over time, and, as knowledge of fighting techniques together with the awareness of impacts on health for the athletes grew, the rules gradually took on a more restrictive form – leading to the unified rule set that is in place today and is shared internationally, for most parts, by all of the major promotions. Most importantly, these rules encompass the classification of athletes into static weight and gender classes; mandatory, standardized, fingerless boxing gloves; time limits of five minute rounds, with three rounds a normal and five rounds a championship fight; and the ban of several striking techniques.

Fights take place in the so-called Octagon, an eight-sided ring, or ‘cage’ of ca. 1,90 meters in height and a diameter of six to nine meters. The floor inside the ring is foam-padded and there have to be two dedicated ‘corners’ (sides of the ring/octagon) (see image A of Fig. 3.4), one for each combatant[16] [17]. Once the fight starts, it is each athlete's task to win the fight according to the rules. That means, either winning by the judges scoring which is done for each round respectively and with eight to ten points for each athlete, whereby the athlete with the most points wins the fight after three or five rounds. The second and third – and more decisive – way to win the fight is by Technical Knockout (T.K.O), Knockout (K.O.) or Submission. T.K.O is reached because the referee decides to stop the fight due to one of the fighters being dominant to the point that the other fighter does not defend herself anymore, is beginning to

[16] "*Mixed Martial Arts Unified Rules of Conduct*". New Jersey State Athletic Control Board. https://web.archive.org/web/20090403062008/http://www.state.nj.us/lps/sacb/docs/martial.html (Retrieved 11.04.2025)

[17] *Unified Rules of MMA*. UFC. http://media.ufc.tv/discover-ufc/Unified_Rules_MMA.pdf (Retrieved 11.04.2025)

lose consciousness, or appears to have a serious injury. A K.O. denotes one of the competing athletes as not able to continue due to legal strikes of the other athlete mostly ending in unconsciousness, while a submission is reached by applying a choke or a lever (i.e., specific grips or handholds) resulting in the attacked athlete tapping out (i.e., giving up by tapping on the competitor or on the floor with a flat hand), or it is reached by the referee stopping the fight due to one athlete actually becoming unconscious.

4 4E Cognition

The previous chapters outlined the domain of interest for this work: The characteristics of playing games which seem to fundamentally transform the ways we experience and make sense of our world, as well as our own corporeal presence in it. Further, conceptualizing a digital transformation – like many other aspects of society and individual life – introduced not only new forms of games and play and transformed existing ones (Kayali 2013) but the digital transformation of games also dissolved the boundaries and differences between experiencing digital and virtual environments in general (Miah 2017). The present chapter will engage in more detail with the specific cognitive, mental, and bodily constituents of the experience of play in games. That is, it will transition from a technical description of the structure of play and games toward the processes of cognition, and the structure of experience is brought forth. More specifically, after introducing the cognitive sciences and the paradigm *4E Cognition*, these concepts will be used to engage with the constitution of the mental states emerging in the previously described cases of sports and video games (MMA, snowboarding, Elden Ring, MHW). Lastly, video games and sports will further be discussed in light of so-called *flow states* which are comprehensively introduced at the end of the present chapter and which will be the specific domain of analysis, interpretation, and discussion for the remainder of the work.

4.1 Cognitive Science and the Historical Roots of 4E Cognition

Cognitive Science denotes the interdisciplinary field of study engaging with mental processes, the conscious mind, and intelligence. The research program encompasses a broad variety of disciplines, including neuroscience, psychology, computer science, linguistics, philosophy, and anthropology. As such, rather than a unified field of study, cognitive science is concerned with the specific problems and questions at which its sub disciplines overlap and converge (Friedenberg & Silverman 2006). While questions about the conscious mind in the Western cultural sphere have been a topic of scholarly concern at least since ancient Greece (Jaynes 1974), the emergence of cognitive science as a discipline is dated to 1979, often also called the *cognitive revolution* most prominently exemplified in Noam Chomsky's critique on the, until then, dominant paradigm of behaviorism (Chomsky 1959). Back at the time, a large part of interest in studying the mind came from early research on artificial intelligence which also grounds the historically dominant metaphor of the mind as a sort of computer. In this metaphor, mental processes are essentially conceptualized as computational – that is, the

manipulation of abstract symbols following specific rules – whereby the brain is the 'vehicle' and substrate for the mind to do so (Varela et al. 2016, p. 8). This *Cartesian dualism* (Descartes 1644) assumes a strong distinction between the domain of the mental and the physical, and, as such, also grounds some of the most difficult problems posed in cognitive science in general, particularly in the philosophy of mind, such as how to explain the phenomenological gap (Levine 1983), or the *hard problem of consciousness* (Shear 1997). While this cognitivist or computational paradigm is powerful in explaining and computationally simulating capacities of very specific problem domains (e.g., winning in Chess or Go), it often falls short on explaining intentionality, phenomenal experience, sense-making, or meaning as it emerges dynamically and in lived contexts and practices (Varela et al. 2016). In contrast to these traditional approaches to cognition, there are also epistemological frameworks in cognitive science that approach cognition as fundamentally constituted by bodily, physiological characteristics as opposed to being fundamentally distinct from them: Mental processes are not – or not only – computational but also – at least partly – constituted by bodily movement and even objects in the environment (Clarke 2008). These approaches or paradigms can be summarized under the term of embodied or 4E cognition research, whereby 4E stands for a collection of four loosely connected and overlapping terms that describe the foundational aspects of cognition, all starting with the letter E: Hence, cognition is 1) *Embodied*, 2) *Embedded*, 3) *Extended*, and 4) *Enacted* (Newen et al. 2018).

4.2 Themes of Enactivism

Traditional understandings of the mind in cognitive science are mostly grounded in functional, computational, or neuro-centric approaches that often ignore the role of the bodily movement or the environment in cognition. This lack of consideration of cognition as being constituted also by environmental and physiological capacities of subjects, in turn, grounds the emergence of embodied views on cognition. Similarly to the previous chapters in this work that conceptualized technological configurations as actively shaping cognition and experience (i.e., emerging as human-technology-world relations (Rosenberger & Verbeek 2015), 4E cognition emphasizes the constitutional aspect of bodily-environmental couplings in cognition. Foundational for the field is the work by Varela, Thompson and Bosch, in the form of the seminal text *The Embodied Mind* (Varela et al. 2016) which proposes a neurophenomenological account of cognition, emphasizing the role of dynamical coupling of body and environment. Further paradigmatic texts for the field are Clark & Chalmers essay *The Extended Mind* (1998) – analyzing the ways in which cognitive processes take place

outside of the brain and in objects in the environment – and James Gibson's idea of *ecological psychology* (1979) – looking at cognition and action as being situated as part of a cognitive-environmental system in which affordances and constraints structure an action-oriented experience.

Shared by all strands of the diverse field of 4E cognition is an opposition to internalist, brain-centered accounts of cognition in which mental processes are taking place inside the brain only. According to such internist, often representational models of cognition, mental structures and processes can be understood wholly in terms of information processing: A continuous representation of the world is created with modality-specific perceptual inputs providing the information to entail it and it is instantiated in the neural structures of the brain. Cognitive processes, then, are the manipulation of these representations in order to create motor output that correlates to the observed environment and to the goals of the cognitive system (Newen et al. 2018, p. 5). Essentially, representationalism upholds a *Cartesian dualism* between matter and mind in which cognitive processes are wholly brain-bound, with the body containing it being a mere vehicle to execute the motor outputs generated by the mental processes that are taking place inside the brain. In contrast to these *representational* views on cognition, embodied perspectives, instead of focusing on the brain as a sort of central processing unit, emphasize the importance of the bodily, environmental situatedness of cognitive agents and refute the idea that cognitive processes are purely abstract, representational, and intracranial processes (Walter 2014). With regard to embodied views, cognition fundamentally relies on the lived, bodily situatedness of a system in its environment and the continuous, dynamic and mutual interactions taking place therein. Subsequently, cognition being – to an extent – 'extracranial' (Adams & Aizawa 2008) also necessitates an explication and analysis of not only bodily, physiological capacities beyond the brain but also beyond the body itself and into the environment a cognitive system is situated in.

There are three essential themes in the 4E program that repeatedly emerge as points of interest, and they are used to define the core concepts and interests of embodied cognition, being: *conceptualization*, *constitution* and *non-representationality/replacement* (Shapiro 2012): Cognition is constituted not only by the bodily and mental capacities of an organism but it also extends into its environment, meaning that certain capacities and processes are distributed to objects that are external to the body. Thus, objects that an organism interacts with are not merely in a causal relationship (i.e., they only give rise to brain-bound, mental processes) but in a constitutive relationship with the cognitive system (i.e., they are part and

parcel of these cognitive processes). Conceptualization, as a theme, concerns questions, not only of how cognitive processes are constituted but also constrained by the bodily structure of a subject. Conceiving and understanding environments strongly depends on an organism's bodily-motoric possibilities and capacities to interact and engage with the objects within said environment. These objects are in turn understood in terms of the affordances and constraints they present to the subject itself (Gibson 1979). Perception of the world is constituted by the (bodily) actions and interactions an organism makes in an environment (Noë 2006). This also means that different organisms with different bodies may perceive the 'same' object differently, further leading to different forms of interactions with and understanding of it.

Crucial for embodied approaches in cognitive science is a turn away from computational understandings of consciousness and the mental: Classical cognitivist views draw upon the metaphor of the computer to conceptualize the workings of the mind; in which representations of the world we perceive are stored (i.e., represented in the brain) in a 'language of thought', and further operated upon (e.g., in form of a 'motor program') in order to generate appropriate outputs like specific movements. Looking at the complexity of our environments as well as of the actions and interactions we perform in it, however, makes this analogy of computation difficult to sustain. The theme of nonrepresentational cognition, then, claims that representing such environments and action plans in all their complexity would be simply too computationally demanding for us and our brains to perform as adequately as we do in these environments. Instead, much of the complex, computational processes said to underlie action and cognition can be replaced by the mechanical capacities that are given by the whole body and, hence, need no direct representation in the mind (Shapiro & Spaulding 2019). Taking into consideration the fast-paced and dynamically changing and very challenging nature of the environments found in many video-games and risk-sports, it is rather difficult to explain the ability of subjects to perform in the chaotic and difficult to predict realities these sports and games can situate.

4.3 Enaction, Embodiment and Mind-Body-Environment Couplings

Replacing the metaphors of the computer (i.e., symbolic representation, program, executor), approaches of embodied cognition, instead, make use of the terminology and concepts of *dynamical systems theory* (i.e., a state space, attractor states, control variables) to describe the continuously ongoing interaction between mind, body, and environment (asin van Gelders (1998) prominent example of the steam valve). Essentially, it is '[...]an epistemology based

on systems theory to postulate that the identifying feature of any system is not its conventional labels, nor its contingent spatiotemporal arrangements, but its organization' (di Paolo 2018, p. 78). Consciousness is viewed here as a property that emerges in the ongoing interaction of the environment and the intentional activity of an organism situated in it. In cognition, this could mean, for example, that the complexity of computing and executing motor and movement schemas can be reduced, if not completely eliminated, just by the biomechanical tendencies of limbs to move into certain resting positions from kinetically 'loaded' positions. This was shown by Thelen and Ulrich (1998) in their work on infant stepping behavior on a treadmill, in which they showed that infants, not yet able to walk, can be manipulated into exercising stepping behavior if held over a moving treadmill with only their feet being moved (pulled backward) by the band. This, in turn, is stretching the muscles of the leg such that it moves back into its original position, and results in a stable, alternating stepping behavior. This emphasizes the role of bodily, biomechanical structures in complex coordinative movement tasks. In walking, for example, alternation between the stepping feet has to be continuously monitored, actively managed and adapted to the environmental conditions, posing a rather large computational effort. However, since many limbs can be conceptualized – biomechanically – as a sort of spring which will tend to contract or stretch back to its original length (an attractor state) if stretched or contracted beforehand, a large part of the need to compute complex movements is circumvented by organizing complex motor actions around such physiological attractor states (Shapiro & Spaulding 2019, p. 8). A similar characteristic is found in modern combat sports, where an adequate performance depends in large part on an understanding of how to constantly position oneself in a way that minimizes the possible actions of an opponent, making it easier to react to them in turn.

In a similar vein, Alva Noë (2006) engages with visual, conscious experience: Seeing and recognizing a thing, as such, is not merely a passive processing and representation of that thing but an active process in itself. For example, considering visual experience, we do not need to literally see a three-dimensional object with all the details it features from every possible perspective with parts of it always being omitted from view. Yet, we manage to visually recognize and experience it as the object it is without effort. Noë argues that in perceiving, we do not merely 'scan' the environment and represent it as an image to manipulate and operate on in the mind: It is, for example, impossible to be consciously aware of all the details in a visual scene. Yet, all of this detail is present, in that it is available to attention through focusing on it. It is in this active process of focusing, in which Noë locates

embodiment because in order to know how to shift attention to a detail in the visual scene, one has to know the movements that would create the experience of this detail. Perception, viewed this way, becomes a practice consisting of the skill to intentionally shift attention to bring specific detail into awareness, and of knowing how to move and position the own body in order to create a specific visual experience – so-called sensorimotor contingencies (O'Regan & Noë 2001). In essence, 'perception is not something that happens, to us, or in us. It is something we do' (Noë 2006, p. 1) – it is perceptually guided action.

A notion of cognitive processes being embodied – i.e., being realized outside of the brain and through bodily capacity for movement – allows one to conceptualize how bodily, physiological capacities afford complex, otherwise computationally highly demanding, movement and action patterns. In turn, it also allows one to engage with the ways in which objects and entities in the environment – traditionally not considered part of cognition – are active contributors to reality as experienced by a given subject. Essentially, cognitive systems extend not only through their corporeal body but also into the environment and the things, objects, other cognitive systems, et cetera. Cognition is, therefore, an ongoing, dynamic, and emergent process of a coupling between brain, body, and environment. Important in this coupling of systems is also the Gibsonian (1979) concept of ecological psychology and the concepts of *affordances* and *constraints* presented by our environment. Gibson argues that our understanding and recognition of objects in our environment is never one that unfolds in the form of an abstract, universal representation of that object but a thing in the environment comes to consciousness as something that is interacted with from the start and precisely because of that specific form of interaction. To Gibson, living systems are constituted in their close and reciprocal exchange and relationship with the environmental systems in which they are embedded and find themselves in. Cognition in this view is constituted in the organism's intentional action, the environmental niche that the organism is situated in, as well as the specific practices of sense-making that emerge out of the structural coupling between organism and environment. Living organisms perceive events, other organisms, and objects in terms of their *interactivity*, i.e., in terms of what practices they afford, or opportunities they offer for interaction (Gibson 1979). As a result, perception and making sense of our surroundings – in the Gibsonian view – are inherently constituted by our capacity to interact with and move in our immediate environments. Seeing a chair, for example, is seeing an opportunity for sitting, and it is recognized as a chair *because* of this affordance to sit on it. Similarly, in alpine winter sports such as skiing, seeing the slope, instead of merely

registering it, means seeing an appropriate bodily response to the terrain in front of – and under – me.

Taking up some of the concepts of ecological psychology and developing them further, in their essay *The Extended Mind* (1998), Clark & Chalmers argue for the notion of an *active externalism* in which brain processes are not only coupled to bodily and motor processes but also to tools and environmental structures and other living systems. Essentially, their argument is that cognitive processes can – at least partly – be constituted by the environment external to the cognitive system and that mental states can be realized by environmental features. Their argument goes that in using tools and technological devices, cognitive processes that would otherwise stay brain-bound are extending into these tools or devices. For example, consider a person with memory loss who – in order to know where to go – uses their smartphone's navigation system to find their way. Since their brain-bound memory function is impaired, they outsource this memory-work to the smartphone and only have to manage the cognitive resources to access this information instead of the information itself. Further, Clark argues that cognitive processes and mental states extend out of the body and into the environment not only to the effect of 'offloading' cognitive load but also in order to create wholly new ways of experiencing the world (Clark 2008). This becomes particularly clear looking at the experience of digital worlds in video games, enabled through the mediation of computational technology, as well as in sports like snowboarding which is possible only through the particular form of technological mediation that unfolds riding a snowboard.

A core concept of enactivism is to conceptualize living organisms as self-organized systems which continuously reorganize themselves and their environment in order to maintain their own *homeostasic equilibrium,* i.e., the dynamic process of an organism's sustainment of it's internal processes in order to function optimally. To maintain a homeostatic equilibrium the organism has to maintain the integrity of its own boundaries that distinguish it as an autonomous, living system while still being in active exchange with its environment through self-regulation (Varela et al. 2016). The world we experience is 'out there' to be represented in the mind nor is it a confabulation projected by the mind. Instead, reality as it is experienced, emerges in the ongoing, intentful interaction between organism and environment. Enactivism emphasizes the circumvention of this Cartesian dichotomy between the knowing subject and world by specifying perceiver and perceived world as in co-constitution. Cognition, in such a view, fundamentally depends on the experience of corporeality, i.e., having sensorimotor capacities which themselves are embedded in a field of

environmental, biological, psychological, social, technological, and cultural contexts (Lindblom 2020, p 3). It also emerges along a co-constitutive inseparability between perception and action: We guide our perception by acting in specific ways as much as the world we perceive guides our actions. Cognition – rather than a form of computational problem solving based on a world 'out there' to be retrieved and represented – should be seen as bringing forth, enacting a world, as well as creating meaning through a rich history of structural, dynamic and mutual, yet continuously changing, sensorimotor couplings with the environment in order to survive and maintain itself. The program of enactivist cognitive science, therefore, attempts '[...] to determine the common principles or lawful linkages between sensory and motor systems that explain how action can be perceptually guided in a perceiver-dependent world' (Varela et al. 2016, p. 173).

4.4 Autopoietic and Autotelic – Between Enactivism and Play

In order to fully appreciate – but also to appropriately analyze and describe – the conceptualization of biological life as autonomous systems and cognition as a form of embodied action, it is necessary to gain an understanding of the notion of *autopoiesis*. Autopoietic systems are defined as autonomous and operationally closed and one of their fundamental characteristics is that they are in a continuous process of self-creation: That is, the operations taking place inside the system are executed in order to sustain the integrity of the system itself. An eukaryotic cell, for example, is organized in various bounded structures (such as nucleus, cell membrane, etc.) which, based on an exchange with each other as well as the broader environment the cell is situated in, produce the components that maintain the organism itself (Maturana & Varela 1980). Cognition being conceptualized as autopoietic refers to the meaningful and intentional interaction with the environment and the construction of structural couplings with it in order to reach and sustain the homeostatic equilibrium of a cognitive system. Any research on phenomenal experience in cognition (i.e., the specificities of these structural couplings as attractor states and the respective sensorimotor contingencies that relate to them), therefore, needs to put an emphasis on the lived, embodied action that characterizes it. This, in turn, will have to include an account of the lived experience of dynamic, ongoing sense-making (Hutchins 2010). In a video game, for example, maintaining autopoiesis would mean to stay thoroughly immersed in the game-world, but in this immersion, also to maintain an adequate, skillful performance in it.

An important philosophical current underlying almost all strands of enactive cognition research is an emphasis on research on subjective, first person experience (Varela et al. 2016). In cognitive science, phenomenology is taken up mostly in the writings of Edmund Husserl (2001), Maurice Merleau-Ponty (1963) and Martin Heidegger (2006). Without the possibility to provide an extensive account of classical phenomenology at this point, the following section shall shortly introduce the general tenets of the philosophical current. Phenomenology as a discipline was initiated by Edmund Husserl in the beginning of the 20th century and as an attempt to conceptualize a methodical and scientific investigation of lived, conscious experience (Husserl 2001). The first motivation of phenomenology is, therefore, to provide an account of consciousness as it is experienced from the first-person perspective. One of the prevalent themes of phenomenological research in the 4E cognitive sciences, is to provide an understanding of *intentionality* – the inherent, meaningful directedness at, or being about something that characterizes all conscious thought. Thus, in phenomenological research, one describes experience as it emerges in the conscious subject, that is, as it is experienced. Further, this is done by bracketing (suspending) what Husserl calls the natural attitude: The natural attitude denotes the mindset with which individuals conventionally engage with the world they find themselves in as a sort of naive realism, an unreflected acceptance of the world as it is encountered, or explained, a posteriori with scientific knowledge and theory. In order to explore the structure of experience itself and how it co-constitutes a meaningful reality, this natural attitude has to be suspended, basically shifting the question from what the content of experience really is to how this content is constructed in experience itself. Phenomenological investigations are, consequently, essentially investigations into how meaning dynamically emerges in subjective, lived experience, rather than what the meaning of a specific experience actually is ontologically, and it is in this facet making phenomenological methods a foundational aspect of exploring embodied action from an enactive perspective (Thompson 2010, p. 27).

The enactive approach to cognition encompasses and interweaves several strands of ideas under one concept: Living beings are seen as autonomous systems which continuously and in exchange with the environment bring forth and maintain their identities in autopoiesis, thereby, enacting their own, specific cognitive domains. This is realized by the nervous system as it generates and maintains meaningful and coherent patterns of activity inside itself as an operationally closed system, distinct from the environment it is embedded in. Importantly, being an autonomous, cognitive system also implies that it is not merely

passively embedded in the environment but the system actively takes part in shaping its environment (Thompson et al. 2005, p. 3). Such a form of sense-making depends on an active exchange with the world, a world which itself is constituted – enacted – also in these sense-making practices of a cognitive system. Meaning, then, is neither produced solely in the internal transitions of the system, nor is it found wholly in a pre-given, static environment that the system perceives. Instead, it is found in the continuously and dynamically evolving relation between organism and environment Meaning is an emergent property that arises from the specific, situated structural couplings between organism and environment. Cognition, in this view, is a form of embodied action arising from but also giving rise to *sensorimotor patterns* of perception and action which, in turn, inform the systems structural couplings with the environment. An emphasis on the lived experience is therefore also the point where enactive cognitive science relies on phenomenology: Both maintain and bring into center the fact that the world of a conscious subject is constituted by that organism's material form and structure, i.e., its capacities to experience the world. As a consequence and in order to understand consciousness and the mind, according to Evan Thompson, it is imperative in research to center the subjective first-person experience through which these sense-making practices and performances manifest (see Thompson 2005).

A critique often brought forth against enactivism is that while it might provide a valuable perspective on lower-level cognitive processes like motor-activity, it fails to provide an explanation for proposedly higher-level cognition such as social interaction abstract and mathematical reasoning, or performing other cognitively highly demanding tasks (DiPaolo et al. 2010, p. 34). Nevertheless, research in enactive cognition also shows the role of embodiment in several higher-level cognition processes such as, for example, in mental image manipulation and language use (Wilson 2002), or in intersubjectivity and the conception of selfhood and personal agency (Thompson 2005). An enactive approach to higher-order cognitive phenomena such as social understanding and interaction would essentially involve the notion of structural coupling – in this case, however, not only between organism and environment but between several autonomous, cognitive systems.

The concept of *intersubjectivity* encompasses the cognitive capacities for reciprocally and interactively modulating and detecting intentionalities and meaning postures, movements, and the expression of emotion between other subjects. Intersubjectivity is an ongoing process in which these dimensions of social intentionality co-regulate each other on a spatiotemporal dynamically unfolding trajectory. Hanne De Jaegher (2021) terms this particular form of

bi-directional coupling between two autonomous systems by the notion of reciprocal *engagement*, essentially describing the mutual interdependence between the behavior of at least two social subjects. Further, if this correlation between two different autonomous systems is nonaccidental, or intentional, it takes the form of coordination. Interaction between two subjects – while there often are affordances enabling, or regulating such interaction (e.g., shared cultural predispositions) – has to be coordinated in real time in order to be initiated and sustained, hence, playing also a generative role in the process it regulates. Both interaction and its coordination should be, therefore, seen as co-constitutive as well since coordination can only be achieved through the interaction of subjects while this interaction – at the same time – has to be coordinated continuously. These practices of interactional coordination, in turn, are realized in the form of embodied interaction between subjects over time. Di Paolo et al. summarize this as:

'Social interaction is the regulated coupling between at least two autonomous agents, where the regulation concerns aspects of the coupling itself and constitutes an emergent autonomous organization in the domain of relational dynamics, without destroying in the process the autonomy of the agents involved (though the latters scope can be augmented or reduced' (Di Paolo et al. 2010, p. 70).

In social interaction, i.e., when structural coupling between a subject and the environment involves another subject, these practices have to become a coordination in which the involved actors have to continuously and mutually adapt and coordinate their individual interaction to the ones of the other. Given such highly dynamic, shifting forms of structural coupling, Di Paolo et al. propose that cognitive science should – in researching higher-level cognition – focus on lived everyday contexts such as social interaction and understanding rather than highly abstract problem-solution, goal oriented tasks. Therefore, it is in the open-ended, dynamic interactions of human practice in which one can observe the generation of new knowledge and the transformation of existing knowledge (Di Paolo et al. 2010, p. 73-74). An especially well suited domain to practice this form of research in the context of dynamic interaction for enactivist cognitive science, they argue, is that of play being a practice in which existing modes of sense-making and meanings are manipulated and transformed.

Similar to Huizinga's (1998) approach to play as an inherently autotelic activity (see section 2.1 of this work), Di Paolo et al. acknowledge the activity of play as inherently not goal-oriented, i.e., it is situated in an environment where there are no direct demands on the

subject to adapt in order to maintain homeostasis. Play activities are, thus, seen as a 'breaking away' from the specific forms of structural coupling that are normally in place, precisely because they do not situate a problem requiring a solution. Instead, they presuppose the freedom and capacities of the subject to afford the suspension of embodied action that is intended to fulfill immediate bodily, social or psychological needs. From an enactivist perspective, then, play is essentially the construction of new meaning by having enough resources to safely experiment and creatively explore with new modes of structural coupling in secure ways. Just as in the magic circle conceptualized by Salen & Zimmerman (2004) and introduced in the second chapter of the current work, in play, reality is in a way 'cheated' by pretending an alternative 'make belief' reality to be real and enacting it in that very process. Thereby, this pretended reality is made an even more 'real' experience, all the while consciously remaining embedded in true reality as it holds out of play (as described in chapter 2.2 as well as in the work by Sutton-Smith (1997) on play). Creating such a make-belief reality and detaching from reality outside of play is – following Di Paolo et al. (2010) – a fundamentally embodied process: Objects in the environment are imbued with alternative meaning through bodily interacting with them. As an example, we can imagine two children finding a tin can on the street and then proceeding to kick it. The tin can is initially kicked without purpose but as it is kicked back – maybe because of the 'just so nicely' annoying sound it makes – the object that was once a tin can (including its affordances for interacting with it) becomes something else, namely something to be kicked when it is lying on the street. This transformation, in turn, – as far as the play-reality is concerned – gradually creates a different affordance for interaction by the playing children, demanding different forms of interaction than it once did, that is, being kicked around.

The norms that are replacing ordinary life in play are essentially arbitrary. They are thought up by the player(s). Similarly arbitrary are the goals that emerge in specific instances of playing. Despite such arbitrariness, however, being enacted through bodily activity and interaction, the reality that playing constitutes can – over time and repetition – become as serious as other social, cultural or biologically upheld norms that exist in human society. The subject in play, as Di Paolo et al. put it, is:

'[...] acting at the pinnacle of his or her enactive capabilities, because he or she is bringing forth an alienated meaning through gestural schemas and then— and here lies the equally radical trick— submitting to the reality thus created through adaptive equilibration (the absence of which would make play unchallenging and "unreal")' (Di Paolo et al. 2010, p. 77).

The concepts of enactivism are equally found to be valuable in the discipline of game design: Systems theory, for example, is not only fundamental to 4E cognitive science as shown in the current chapter but also of contemporary paradigms in understanding and designing games as shown in chapter 2.3 and through the work of Salen & Zimmerman (2004). Another fundamental aspect that is shared between game studies and enactivism is the use of the concept of interactivity. For Di Paolo et al. (2010), interaction is the skillful coordination and management of structural coupling with the environment (which can include other subjects) through embodied action, a process through which both meaning and a particular experience arise. Further, in activities such as play, these modes of coupling can get replaced by arbitrary, alternative, and virtual 'make-belief' realities, yet remaining consciously embedded in their broader contexts which further are spatiotemporally limited (as outlined in chapter 2.1 of this work). In a very similar vein, Salen & Zimmerman conceptualize games as sites of interaction in the sense that players in interacting – or structurally coupling – with the game generate meaningful experiences of playing the game.

Essential in Salen & Zimmerman's (2004, p. 58) definition of games – and again paralleling Di Paolo et al. (2010) – is the reciprocality that characterizes a subject's interaction with its environment: In a game, the player or several players structurally couple and interact with the game system and each other, thus, changing the state of the game system while, in turn, their states as players constituting the game also change. In contrast to pure play, games are, of course, rule-governed and constructed with a certain design in mind including which kinds of interactions the game-system affords to which effects. This implies (depending on the specific game in question) that games, unlike pure play, come already 'prescribed' with certain affordances and constraints for generating meaning through interaction by players which should – at least to an extent – also limit the freedom of generating new meaning in 'pure' play (cf. for ch. 2). However, the possibility to design environments to afford specific experiences can also be very powerful if attempted successfully. Designed game environments – through their affordances and constraints for interaction – can allow players to experience a 'just right' challenge, which dynamically grows with the player's ability. This in turn implies a mode of structural coupling and enactment of sensorimotor contingencies that is in accordance with an immersive, joyful and engaging experience.

Games – in this work and from the here introduced enactivist perspective – will be conceptualized as culturally, technologically situated and constructed as systems providing the affordances to create an immersive form of contest or performance that situates an

alternative reality in its experience. In a game, cognitive systems are coupled with a designed environment and/or other cognitive systems and in which they have to enact very specific, skillful performances of interaction and/or coordination, thus giving rise to alternative and generative forms of sense-making. Playing a game transforms experience such that embodied action, sense-making and experience are brought forth in accordance with the design of the game. It is in the aspect of *being designed* in which games can be very useful frameworks to enable their players the enacting of very specific activities and experiences which otherwise are difficult, or even impossible, to bring forth.

Generally, games situate, but also enable new forms of sense-making and generating meaning through the structural coupling of an autonomous, cognitive system with 'layers' of a designed environment, ranging from bodily capacities, to objects (tools and technological artifacts), to social interaction (cf. Clark 2010, Di Paolo 2010, Ihde 2012). Given their designed and controlled properties, game-environments – once a player becomes immersed in them – prescribe an experience in which maintaining the homeostatic equilibrium as an autopoietic system is thoroughly different from reality as it ordinarily is experienced. Integral to the design of many video games, as well as risk-sports is the so-called experience of flow, which often is not only made easier to experience through specific forms of game-play, but is also the foundation for an optimal performance in the respective game itself.

4.5 Flow States, Skill and Embodied Action

Where Di Paolo et al. describe play as situating a pinnacle of enactive capabilities, the organism at play as understood by Mihaly Csikszentmihalyi, is when it is most creative, whole and free of needs and constraints (Csikszentmihalyi 1975 p. 136). This recognition of one of the primary qualities of play as autotelic (i.e., an activity done for no other purpose than itself) grounds the so-called 'flow-experience'. Csikszentmihalyi's research essentially concerns the phenomenon of a complete immersion and absorption into their world that the enactment of certain activities can exert on its subjects. Of particular interest here is the finding that, apparently, it is especially in autotelic activities such as play with no direct or external reward or gain in which individuals experience being in flow. A very similar notion to that of the flow-experience is engaged by Evan Thompson in his book *Mind in Life: Biology, Phenomenology, and the Sciences of Mind* (2010)′ where he dedicates a chapter to the relation between experience and time, focusing on what he calls the 'flow of action', or 'absorbed skillful coping' (Thompson 2010, p. 313) – a notion he takes up from Hubert

Dreyfus who fittingly entertains it in the context of a game of football. Essentially, it describes the specific mode of motor intentionality that characterizes habitual and skillful embodied action in which moments in time flow into each other seamlessly, i.e., everyday actions that do not require a lot of deliberation or do not serve abstract, non-immediate and grand goals.

Importantly, the type of motor intentionality and experience characteristic of the subject in absorbed skillful coping is one which transcends the subject-object structure: Intentionality, rather than situating environmental objects, is in the interaction with them. Experience in this mode of structural coupling comes reflective only if the skillful coping is disrupted, that is, if the specificities of the momentary body-environment coupling have to be adjusted in order to fall back into skillful coping. Otherwise, conscious experience in absorbed skillful coping is of a thoroughly kinesthetic structure that unfolds in an 'non-reflective attunement to the interplay of action and milieu' (Thompson 2010, p. 313). Csikszentmihalyi's considerations about flow bear similar tenets and entertain similar concepts as the here presented representations – or rather embodiments – of 4E cognition. Similar to the idea of skillful coping, the experience of flow occurs in temporal segments in which the structural coupling between subject and environment is in a state of homeostatic equilibrium, that is, embodied action unfolds in such an ordered fashion that intentionality is purely at the prereflective, bodily interactions with the environment without second-order volitional reflection, it is manifest only in the disruption of flow, i.e., in the deviation from homeostatic equilibrium. Csikszentmihalyi describes this circumstance as a state in which information can be integrated by the system in an ordered fashion in which the environment demands neither too much, nor too little from a subject's capacity to enact appropriate sensorimotor patterns. Essential in this is a balance between the challenges that are embedded in the environment and the particular bodily-cognitive skills with which an individual makes sense of and copes with the environment: Flow arises if a subject is engaged in skillful activity in an environment that poses a 'just right' challenge for the subject-specific capacities of embodied action, it depends on the interplay between what there is to do as well as what the organism is capable of doing. There is a reciprocal relationship between the intrinsic enjoyability of an activity and the affordances in that activity to experience flow: Fun activities enable flow just as much as flow in itself is an enjoyable experience (Csikszentmihalyi 1982).

It is in this aspect in which playing games serves as a valuable context, not only to engage with the flow experience scientifically but also to instrumentalize the domain of games in

frameworks of education and skill acquisition. While the flow experience is not limited to play and games, everyday life constantly affords a variety of stimuli, goals, and constraints that need to be integrated and which often are conflicting or contradictory. While the environments encountered in playing games are not necessarily less complex than everyday life environments, the fact that they can be non-serious yet utterly sincere activities without external motivations also implies that there is no demand on the subject to consider and adapt to any constraints beyond the ones that are realized in the activity itself. This combination of sincerity and non-seriousness, in turn, allows to be completely immersed in the activity itself, as it excludes from experience the noise that disrupts the flow of action and narrows down motor intentionality to the present, dynamically unfolding (bodily) action patterns (cf. Thompson 2010, p. 313).

Considering the specific structure of the flow experience which – despite it being realizable in virtually any context or activity – is remarkably stable over all these activities, there seems to be a constant range of dimensions that generally characterize the flow experience (Csikszentmihalyi 1975). First of these characteristics is a merging between awareness and action, that is, intentionality is wholly situated in the performance of the action sequence unfolding at that moment. One is aware of acting yet not of the action itself in any descriptive or abstract sense but rather in its performative realization along a temporal trajectory as such. It is a form of knowing the current position of one's body as well as the opportunities of movement that exist (Varela., Thompson & Rosch 2016, pp. 149-150). In flow, the subject's intentionality is not directed at – or reflective of – itself, but it is what Thompson (2010, p. 313) calls *prereflective awareness* in which knowing has the form of 'I can (move this way), rather than I think'. This state of consciousness, which is fully realized in bodily action, most of the time and without practice is only of very short temporal duration, or at least pervaded by disruptions that occur when awareness becomes reflective again (i.e., entertains second-order reflections of the sort of 'was that action the right one?', or 'Should I be doing this?') which prevents awareness from being in the action itself, as it becomes about the action. Most importantly in this, the challenge faced by the subject has to be subjectively feasible, i.e., perceived as in the scope of one's abilities – another reason why flow arises as often as it does in games, considering they consist of clearly defined goals, means, and rules, and in the lusory attitude also of a safe space with no further consequences for life outside of the game.

Hand in hand with the merging between awareness and action is a narrow attentional focus upon the task at hand and the embodied action it involves. It is the structure of games which, most of the time, are designed to intrinsically afford such a narrow focus for the subjects at play, constituting realities with clearly defined goals but also very specific forms of actions, or sensorimotor patterns they prescribe in being played. The rules define which aspects of the environments are to be the object of intentionality and awareness and how bodily performance in engaging with them can be enacted. Temporal awareness – or time-consciousness –, in this mode of focus, is replaced by the immediate action sequences that are afforded by the environment (Maslow 1971, pp. 63-65), as there is no need, nor time to reflect oneself, or things external to the activity that one performs. Merleau-Ponty describes this form of temporal awareness in the flow experience as taking the form of only a tension that signals deviation from an optimum (itself not explicitly known), as well as its relief in successful adaption of sensorimotor coupling in response to homeostatic demands (Merleau-Ponty 1963, p. 168-169).

A third effect of the complete immersion of consciousness in the activity that a subject enacts in playing a game is the loss of self, or rather a dissolving of personal identity as a social construct in the activity and the absorption of conscious awareness in the performance of skilled motor action. The rules, goals, and means of games situate a reduction of reality to a narrower domain of activity which is, essentially, also a reduction of the complexity that characterizes ordinary life. However, experience itself does not 'decrease' in the same way – it is always 'whole' (Heidegger 2006) – and yet, it narrows down to emphasize and improve in specific aspects of embodied action. Intentionality in flow becomes intensely focused on internal bodily processes and bodily-environmental position and interaction, kinesthetic sensation and awareness of fine motor movements increases. The flow experience is also one in which the subject experiences having control over actions and environment. Rather than being an explicit sense of mastery over the environment, it is one where the subject does not experience the potential lack of control, i.e., the possibility of not being able to perform adequately to the demands of the environment. Thus, flow experiences likely occur only in situations in which subjects are able to 'skillfully cope' (Dreyfus 2002, p. 378; Thompson 2012, p. 313) – that is, during activities in which subjects are able to enact modes of structural coupling with the environment that maintain its homeostatic equilibrium (Pezzulo, Rigoli & Friston 2015). Flow, therefore, presupposes – but also fosters – a sense of control and ableness and an absence of worry about failing. Activities in which flow emerges are,

therefore, situating environments in which a subject is theoretically able to cope with – if not to master with practice – all possible demands for action, or at least in which the subject experiences being able to cope with all possible demands for action (as, for example, in many risk and adventure sports).

Lastly, part of the experience of control over the unfolding of reality is the dynamic, yet clear and unambiguous feedback of performance for the playing subject. Games, through goals and rules, prescribe 'inefficient' modes of action (Suits 2005, p. 38). Immersed in a game, conscious thought, intentionality and the enactive possibilities to sustain an homeostatic equilibrium are transformed into an alternative mode of experiencing reality which is spatiotemporally distinct, yet embedded into ordinary life. Cognition in skilled play takes a specific form of subject-environment coupling and interactivity in which action and environmental feedback can and are intricately and relatively unambiguously monitored and integrated in the dynamic, real-time sense-making of the subject as described also in Merleau-Ponty's description of absorbed action above.

Flow, approached this way, is also an *emergent property*. Emergent properties describe characteristics often found in complex systems, in which the system as a whole exhibits properties that are not reducible to any of the properties of their constituents. While these systems seem to exist by virtue of – and are dependent on – their constituents, the specific autopoietic constellation of and interaction between these constituents itself gives rise to new phenomena (Varela et al. 2016, p. 88). The experience of flow is an emergent property in the sense of arising in a specific, skillful, sustained mode of engagement with one's environment. While it is an enjoyable experience in its own right, it should be differentiated from what Csikszentmihalyi calls 'pleasurable' experiences. Pleasure signals a homeostatic satisfaction (e.g., having eaten and being 'full' after being hungry), while enjoyment refers to an ongoing experience of increasingly successful coping with challenging environments over time and, thus, signals an experiential function of growth and transformation (of course, this can also be pleasurable, if one wants to conceptualize the activity of improving as providing an experience of pleasure and satisfaction in this homeostatic sense) (Csikszentmihalyi 1982).

One context that very prominently enables flow experiences is that of playing games and the ways in which specific modes of coupling between organism and environment, through extended (Clark 2008) and embodied cognition (Noë 2006), social interaction (Di Paolo et al. 2010) and technological mediation (Ihde 2012) can be designed for in these games. Games as

a domain very often converge all of these aspects and are therefore a prime example of lived cognition showing the ways in which cognition is embodied, extended, embedded and enacted. The experience of flow itself does not imply winning the game, success at playing, or even mastery or ease with which an activity is performed. On the contrary, it is precisely the difficulty, the demand on the subject and the possibility of failure yet feeling up to the task that constitute the flow experience. Importantly, this is a thoroughly subjective measure, as feeling up to the task does not necessarily correlate with objectively being so (although, a subject will certainly recognize its own insufficient performance – and, hence, not feel up to the task anymore – given the dimension of clear feedback). Good games, then, allow for infinite perfectibility without getting boring (i.e., affording an appropriate level of joy for all levels of expertise, and becoming more and more complex with increasing expertise): Design has to coordinate environment-subject coupling in a way that experience is neither too demanding, nor too easy for the subject to perform the play-activity.

In essence, the ‘flow-’, or so-called ‘optimal experience’ (Csikszentmihalyi 1982) denotes a psychological state that occurs during activities that are experienced as very challenging, yet manageable. Most characteristic of the structure of the flow experience is a dissolution of one's own identity, sense of time and attention into the current activity. Video games and risk sports are often designed to enable such an experience, by providing a ‘just right’ challenge, which dynamically grows with the skill of practitioners. The cases of sports and video games introduced in the previous chapter all demand and are designed for specific forms of sustained and bodily performance. The general introduction of the paradigm of 4E cognition provided a useful framework to explore human experience in highly dynamic, fast-paced and motorically challenging environments such as those found in the cases presented in the previous chapter. Given the highly movement based character of the flow-experience in these cases, a perspective that – in explaining cognition – emphasizes the role of both the body of and the material, environmental structures surrounding a subject will tremendously contribute to a further analysis of the flow experience.

Up to this point, the topics of cognition in sports and video games, considered under the light of a digital media transformation, were engaged on a broadly theoretical level. The following chapter in turn, will provide a more pragmatic contribution to these theoretical considerations. It will contain accounts of the personal experiences I made in the activities of the four, previously introduced cases: ‘Elden Ring’ (2020), ‘Monster Hunter World: Iceborne’ (2019), Snowboarding and Mixed Martial Arts.

5 ‘In the Zone’: Exploring Flow in Sports and Video Games

A critical analysis of any game presupposes a reflection about the position from which it is undertaken. Therefore, the following paragraph is to shortly situate my own, personal involvement and history with the games and sports explored here.

Although I did not play a lot of video games over the course of the last year, I played both of the games, Elden Ring (ER) and Monster Hunter Wilds (MHW), extensively before (or other games from the same franchises which are arguably very proximal in their general gameplay and the experiences they afford). Although I very much enjoy spending my leisure time playing video games, I never played competitively or more seriously than as a hobby. One of the video games analyzed here, MHW, is part of a franchise that I hold dear since being a teenager, when I first played one of its older titles on a handheld console Playstation Portable[18] and later on the Apple iPad[19]. I have played the pöspecific title in question here since the year 2018, sometimes alone but most often together as a team with my brother, as I did in most of the sessions that I played for this work specifically. I am much less experienced, on the other hand, with the Soulsborne titles by FromSoftware with the only title I played before Elden Ring being the 2015 release titled Bloodborne[20]. Elden Ring was released in 2022, which is also the year I acquired it. I judge my own skill level in the game as much lower than, for example, in Monster Hunter which reflects also in my playing experience – inside as well as outside of the context of this thesis. Despite this, I always felt highly motivated by the challenge that seemed slightly above my own skill-level which the game provides.

Besides playing video games, I passionately ride snowboard if the seasonal circumstances allow for it, and I practice a range of martial arts which converge under the umbrella term of Mixed Martial Arts (MMA). Both of these general types of sports (in many aspects) are part of my life since I was 5 years old (I started skiing and practicing Kung Fu at around that age) and, over the years, with some level of experience I transitioned into snowboarding and Kickboxing at around the age of 14 years. In 2018, I had my first amateur kickboxing fight in Germany, after which I started to integrate practicing Wrestling and Brazilian Jiu Jitsu and, ultimately, training these disciplines in convergence. Further, in February 2024, I took an apprenticeship as a snowboard instructor under the official governing body of Alpine sport in

[18] https://consolevariations.com/database/sony-psp-x000-series?activeSortLabel=rarity_score&order=asc
[19] https://support.apple.com/de-de/112017
[20] https://www.playstation.com/de-de/games/bloodborne/

Austria (‘snowboard Austria’, part of the ‘Österreichischer Skiverband’), which I successfully absolved. To me, the joy in all of these activities is that they allow me to focus on nothing else but their own practice once they start. That is, they are immersive to a degree that it feels impossible to think about or do something that does not concern the immediate situation and action taking place. I do not consider myself a professional in any of these activities. The immersiveness was a consistent experience throughout my history with them, independently of how ‘good’ I was at them, objectively. For me, games were therefore always a way to explore and learn new aspects and skills via thoroughly enjoyable, voluntary activity, forming a reciprocal relationship between learning, practicing, and fun. As I explore the experience of flow, the study of games and sports that is undertaken here should less be seen as a structural analysis of the specific sports/games but rather as an analysis of the specific structure of the flow experiences these activities enable for their players and the ways in which they are similar across very different forms of structured play – inside the fields of video games and traditional sports, respectively and between both.

5.1. Video Games

The desk is an object and a place that is rather prominent in the phenomenological tradition. As it happens, in this work and for me personally, the desk is also the entry point into the alternative, virtual realities of video games. Sitting down at the desk, to me, already feels like entering some sort of closed-off space: In front of me the computer monitor and the white wall directly behind it, and beside it on the desk are only the computer mouse, the keyboard and the speakers. While this already takes up most of my field of view, it is not very exciting. Yet it already closes off everything else in the room from my awareness. Once I start the PC, it boots up and I am absorbed by the digital space on the monitor which I navigate through the movements of my fingers on the keyboard and the mouse next to it. It should be noted that this ‘routine’ of entering digitally mediated and constituted environments is one that is similar for me in playing games and in working – these lines, for example, are written in this space as well. Thus, while I am experiencing an alternative reality already, I still have to make the conscious decision to engage in playing and in playing a game.

5.1.1 Case 1: Elden Ring – Malenia, Blade of Miquella

In Elden Ring, the player navigates a fictional, three-dimensional game-world by foot or horse, attempting to restore the so-called ‘Elden Ring’ – a manifestation of the metaphysical order of the world – and to uncover the meaning of this task in the game (see chapter 3.2.3).

Besides a handful of friendly or neutral non-player-characters (NPCs), almost any other entity in the game is hostile towards the player and will try to kill them. One of the core mechanics of Elden Ring are its complex, dynamic, and difficult fights (i.e., combat situations involving NPCs), and the regular outcome of the player dying in these fights. During fighting, players have to carefully manage their maximum amount of stamina (and several other resources, such as health and mana), as they can neither attack nor defend themselves when their stamina is depleted. Further, once players have given an input via gamepad, and the according animation of the player's in-game character starts, it cannot be stopped, potentially exposing them to an enemies attack. Therefore, it is paramount to strategically and precisely time when and where to give the inputs to attack, dodge, or defend. Elden Ring also features a range of boss fights in which the player faces especially difficult and powerful enemies in a closed-off arena. In this section, the analysis will concern my experience of attempting to win such a bossfight in Elden Ring: *Malenia, Blade of Miquella*.

I chose this instance of gameplay because I had played the game before but stopped after not being able to win against Malenia. Thus, knowing its level of difficulty, I deemed the fight as a sufficiently tough, yet possible challenge to engage in and analyze the experience of flow. Since I was going into the challenge knowing how hard it is and how frustrating the fight had been to me before (and since I had to engage with the game in a more analytical way anyways), it made sense to me to approach it in a more intentful way, i.e., to think of a general strategy and train specific action and movement patterns. For that reason, I started to engage more deeply with the existing knowledge about the game, its mechanics and gameplay that could be found online. Elden Ring (as most FromSoftware games) has an incredibly active online community, especially when it comes to discussing and interpreting the in-game story and lore but also in strategizing specific fights, providing detailed instructions on tactics, or specific movement and action-patterns in response to specific attacks – in short, the paratext existing around the game (Fernandez-Vara 2024, p. 7). Besides that, certain attack patterns used by Malenia will kill almost any *build*[21], if not evaded correctly, such that one has to learn very specific counter or evasion patterns in response. Over the time of my 'training', I developed an intuitive attention for the visual and auditory cues preceding specific attack patterns of Malenia – something that felt impossible in the beginning of my play sessions, as the exact timing of evading or counterattacking has to

[21] A 'build' denotes the specific equipment, weapons and items of a player-character, which will define their play-style.

happen in milliseconds following such attack patterns. This, in turn, also emerges in what were followingly perceived to be serious attempts in beating Malenia, as I felt more able to adequately react to her in the fight, not only to the *Waterfowl Dance* (i.e., a unique, powerful attack only available to Malenia, consisting of swift leaps and slashes) specifically but in my general ability to evade most of Malenia's attacks with some consistency. Thus, with a growing confidence in my skill to dodge, the fight became much more fluid and allowed for a more aggressive and diverse engagement[22]. In total (i.e., from start to finish), I have played Elden Ring for about 240 hours. For the fight against Malenia itself, before engaging with it for this work specifically, I spent an estimated 10 hours trying to beat her. Taking up the fight again and as a case study for this work, I had to play around 16 additional hours over the course of roughly one week before managing to beat her. Usually, it took me one to two hours of a single play-session before I became too frustrated to continue playing and quit for that session and day.

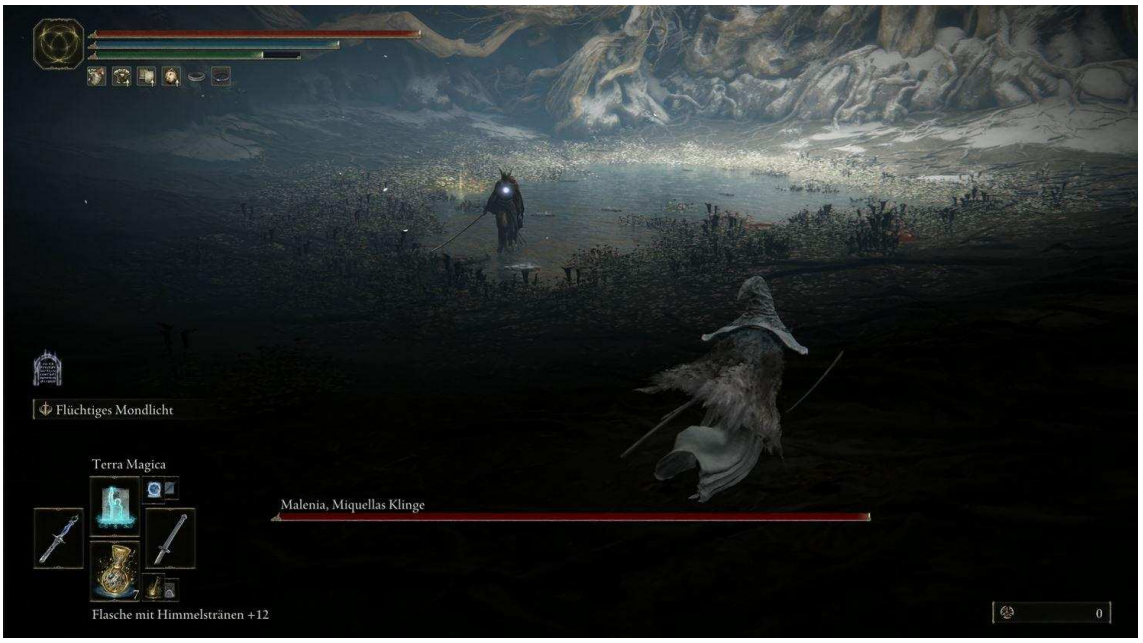
The fight itself was – for most of the attempts that I took – not remarkably long, lasting on average about 7 minutes, independently of winning or losing the fight. The fight itself is split into two phases, whereby the second phase is more fast-paced and difficult than the first one. During the first phase, Malenia is less aggressive and starts attacking mostly only in close range combat, yet with precise movement and timing of her attack sequences which kill most players in only a few hits. The second phase initiates upon bringing Malenia's health to zero during the first phase. The fight becomes, consequently, more fast-paced, with Malenia using five additional attack patterns and generally causing even higher damage to the player. Where the first phase has an atmosphere of a battle to the death between equals, the second phase turns this over. The music, all of a sudden, becomes more dramatic. Malenia herself gains wings, a high increase in speed and in attack prowess. These events result in a more imposing look of the enemy during the second phase which implies that the previous, equal matchup has drastically changed in Malenias favor. The change in mood, however, is only adding to the frantic feeling and high tension – often to the point at which I fail and lose the fight – that characterizes my input and player action in the second phase, as the timing and direction running, dodging and evading attacks becomes highly difficult to manage, and landing attacks oneself becomes possible only scarcely.

[22] see https://youtu.be/L5RzSvJsnbE for one of my many attempts at beating Malenia, including an (almost) flawless dodge of Malenia's Waterfowl Dance at minute 1:20, as well as a failed one at minute 2:10

The ER boss Malenia does not have to be fought completely alone, as players can summon a single ally to aid them in the battle. This can be done either from a range of predetermined NPCs called *Spirit Ashes* in the game which the player can find and then summon throughout the game, or they can call upon another player (if another player is offering to assist). Both options have their advantages. The Spirit Ashes, regarding their range of possible attacks and movements, provide a relatively predictable, consistent, and reliable cooperator. Summoning another player into your own world, in turn, can be more of a gamble as it is difficult to know before the summoning how and with which build and gear exactly the summoned player will fight. As a result, one might fight sometimes with other players that are highly skilled, and sometimes with cooperators that are killed by Malenia in the first minute, as well as anything in between.

Regarding my personal experience, once the fight starts, I am completely immersed into the world, and my player-character's body – although thoroughly detached – is a direct extension of my being. The specific function of each button and its corresponding in-game consequence feels rather unconscious: I do not think about what each button does, but my fingers enact the right inputs through muscle memory. Nevertheless, the fine-tuned movements of my fingers underlie every action I take in game and they are constitutional to my immersion into it. Of course, I am aware that I sit in front of a screen and will not be physically injured. Yet, it is easy to feel the tension of being in a fight for one’s life. While my whole body tenses up during play, I am also becoming highly aware of the patterns and movements of my fingers hovering over, pushing, and pressing the buttons and sticks as I move through the arena and circle Malenia. For the time playing, by taking control of my player-character's actions, I extend into it and it becomes part of me. I can fluently engage in attacking, jumping, rolling, and evading, all through a considerably small number of buttons. Stepping into the arena of the fight, not only the real world but also the in-game world is suddenly confined to the single circular fighting ground. As Malenia instantly engages the fight upon entering, she also immediately enforces a reaction by the player, drawing them into the fight.

A



B

Figure 5.1: ER boss Malenia in her two phases of fighting. (A) Malenia is walking towards the player in the first phase. (B) Malenia, transformed and in her second phase, is attacking the player-character. In both images, the red bar at the bottom indicates Malenia's life points, while the bars at the top left indicate the player character's life points (red), mana points (blue), and stamina points (green). The character's equipped weapons, spells and items are displayed in the bottom left corner. (Source: Screenshots taken by the author from the video game Elden Ring (2022))

Once engaged in the fight, my spatial awareness narrows down even further, until it encompasses only the space of the engagement with Malenia through the player character and the cooperator's character as we move through the arena. This, nevertheless, includes an

implicit understanding of my own and Malenia's dynamically changing positioning in the arena, as well as the opportunities and necessities for further action and movement emerging from it. I do not actively attend to the environment, but I know how to move according to my own and Malenia's continuously changing position and movement, and this knowledge emerges only in the in-game movement itself. All my movements, attacks, and defenses are enacted in my hands and fingers which are the foundation of my agency in the game. In this general flow of action, there are also those instances in which the more complex attack patterns of Malenia have to be coped with, in which this focus narrows down even further and the tension seems to become unbearable. In these moments, all I experience and focus on is the movement of my fingers in exactly the right sequence, timing, and direction. It is here, where I move right on the edge of failing (e.g., by mistiming a roll) in which flow is disrupted, or leads to a successful evasion and a temporary, partial release of the tension building up to this point. During the engagements, I often feel an intense pressure to continuously act and react with my fingers and player-character to the fast changing in-game events. Accompanying this pressure, I feel an increasing tension throughout my whole body – even though I only use my fingers to act – as I feel like barely holding up to the pressure of the intense fight.

In the last attempt – in which I finally managed to beat Malenia – I played together with another player that I summoned. I decided to rely upon *magic use*[23] for the most part, and to rely on melee attacks (close-range attacks, e.g., with a sword) after dodging Malenia's own melee attacks against me and, otherwise, tried to keep out of her range of attack. With two already considerably solid attempts during the current session, practicing to dodge her attacks the days before, and, further, focusing closely on my collaborator's actions and position, we finally managed to win the fight and beat Malenia, Blade of Miquella. Once the last hit landed on Malenia and the fight – very suddenly, it felt – ended, the tension of barely holding on to control throughout the fight was instantly relieved and replaced, first, by a few seconds of realizing that I had succeeded, then, a strong relief and the feeling of satisfaction to finally having performed the deed. Having beaten her in this fight, despite all the help that I had received, was – for me – certainly one the most difficult video game experiences and challenges I have ever encountered. Succeeding in it felt – given that I put that many hours into it even before this work – like a great achievement, and, even more importantly, like an

[23] focusing on using a variety of ranged attacks that depend on the resource of 'Mana points' (depicted as the blue bar in the upper left corner in figure 5.1)

incredible relieve: Not only from the strong tension that was present throughout the fight but also beyond the game play itself regarding the expectations I had in my own skills at playing games and the pressure after choosing the fight as a case for this work, specifically.

To me, completing the challenge of beating Malenia was an experience that featured both a lot of joy but also a lot of frustration. The game design of Elden Ring – especially when it comes to boss fights such as Malenia's – prescribes the player repeatedly dying and retrying the fight. During my playing and for the main part of my attempts, I did not experience flow at all. Many attempts were dedicated to train specific movement patterns and, therefore, not strategically optimized. Equally many attempts did not work out well but ended with my player-character dying in the first minutes or sometimes even seconds of the fight. In essence, while I find Elden Ring and its gameplay itself very enjoyable, part of this experience for me is also a rather strong constituent of frustration, slowly building up over a session and usually also being the reason for me to end it, when I become too frustrated. Part of the frustration in Elden Ring – despite it being a hard game – is that it presents a very balanced and fair challenge in which demands to an optimal or appropriate performance are especially clear, even if they are not exactly easy to meet. Thus, in playing and failing, it was always noticeable to me where my insufficiencies lay and what I could do about them – for example, adjusting positioning, direction and timing of dodges in response to a specific attack pattern from Malenia. Despite this and the nerves it cost me at times, there were also those attempts that felt extremely good to play through, even If I did not manage to beat Malenia (which I did only once during the many attempts I made). For instance, being able to dodge Malenia's attacks, knowing and trusting in my fingers to execute the inputs for the in game movement patterns, felt incredibly satisfying and powerful whenever I managed to pull it off, providing a feeling of control over the fight in general and, hence, leading to a higher level of confidence in engaging more aggressively with Malenia.

For me, Malenia was a very challenging boss to fight, as it takes all of my concentration, to even manage to survive. Despite the frustration it often led to, the challenge of the fight was also incredibly motivating, as my failure very clearly showed me my shortcomings and aspects I could improve myself in.The knowledge of when and how to act and engage can only be in the form of this acting and engaging itself and will never be sufficiently conveyed in a technical or strategic description, although in this case, the paratext of the game helped me a lot to effectively train specific aspects.

5.1.2 Case 2: The Monster Hunter Experience – Playing the Gunlance in MHW: Iceborne

Monster Hunter Wild is the fifth main title in the Monster Hunter series of computer games where its players are mainly tasked to complete quests in which they have to defeat a single large monster, either alone or as a group, to gain experience and new equipment without any further main goal that ends the game. I have played the Monster Hunter series titles since the year 2012 and, to me, the core gameplay has stayed remarkably unchanged throughout its different releases. In total, I assume I have played the Monster Hunter series for around a thousand hours. Roughly half of this time I spent playing the title MHW specifically, with 482 hours of gameplay, the other half of the time consisted of playing time in *Monster Hunter Freedom Unite* on the Playstation Portable (2008) and on iPad (2014), as well as *Monster Hunter Tri* (2010) on the PC. Throughout my history with the game, I developed a favor to mainly use the Light Bowgun, the Hammer, the Gunlance, or the Longsword as my weapons of choice. Consequently, these are also the weapons and their attached playstyles I perform best with. In this case, the analyzed experiences refer to play sessions in which I used mainly the Gunlance, which, out of the above four, is my favorite weapon. The sessions analyzed here were also always played together with my brother and, further, sometimes also with one to two other, random players that joined our quests. Enabling the possibility for other random players that are not part of a preconfigured team of friends can be very risky, as there is no way to judge how skilled they are beforehand. Quests can also become rather frustrating, if someone fails to play cooperatively or is just not playing well enough, but it is also very dissatisfying if someone with exceedingly better skills than oneself joins the fight and, in the process, makes a quest too easy to be truly enjoyed. For this work specifically, I played MHW over a much longer, but less intensive period of time, amounting to playing roughly twice a week for 1-2 hours, over the course of four weeks. Importantly, In all sessions I played for this work, I played together with my brother and very often, with one or two additional, other players that joined our quests.

During the combat that takes place between the players and the monster, it is the monster that is in control of the fight for the main part: It is not only several times the size of the player, it is also typically able to kill a player-character upon a mere one to three attacks – depending on the specific monster and the gear worn by the player. Players have to carefully choose when and where to engage in attack and, otherwise, remain defending and evading the monster's attacks which themselves are always in the form of monster-specific, recognizable

action and movement patterns. As the quests in MHW are rather long, ranging from 20 to 50 minutes, players are best advised to take the full time they are given for a quest to slay a monster and, therefore, should play more carefully and slowly. In general, it is highly difficult to defeat any larger monster in under 15 minutes. Rather than analyzing the fight against a specific monster, in this case, I decided to explore more deeply the experience of playing a single specific weapon type against different monsters in order to generalize the particular experience of playing the weapon gunlance which will strongly differ from the experience of playing any of the other weapon types. The large variety of weapons and the fundamentally different play styles they demand, as well as the play experience they afford, makes it difficult to essentialize the experience of fighting a specific monster, as each weapon will mediate a different experience therein. Thus, it makes more sense to analyze the general style of play of using a specific weapon, in this case the *Gunlance* (see Fig. 3.2 Image A for reference).

Although the gunlance is often considered a 'niche' weapon in the franchise, over my history of playing, it became my favourite weapon. The experiences collected here will, therefore, focus on the gameplay of using a gunlance rather than focusing on fighting specific types of monsters in the game. The gunlance is a mixture of a lance and a cannon which further introduces a 'shelling' mechanic, allowing the user to fire a number of explosive shots in close range next to only the thrusting and stabbing attacks of the normal lance. It is also one of the few weapons that feature a shield and a blocking mechanic at the cost of a reduced general mobility and freedom to move like the *dodge roll* (i.e., an evasive rolling maneuver) which other weapon types afford. Instead of a dodge roll, though, all I can do to evade using the gunlance is a short, directional jump that offers less *i-frames*[24] than the dodge roll. As a compensation for this decreased mobility, however, I am instead able to block a monster's attack head-on with my shield at the cost of stamina. Having played gunlance for a long time and despite the reduced mobility when using it, the evading jump is my go-to evasive maneuver, while using the shield is something I resort to only in very dire situations in which evading is impossible. While it is theoretically possible to block all incoming attacks with the shield, it is decisively more practical to resort to jumping, as it is not only an evasive move but also allows for a quick repositioning in relation to the monster, thereby opening new opportunities for attacking. On the other hand, when I block an attack using my shield, while I stay clear of taking damage, I will not only be immobilized for a second after the attack but also be pushed back and out of my range of attack, thus, requiring me to get close to the

[24] I-frames are so-called 'invincibility frames' during which a player is invulnerable to the monster's attacks.

monster and into a favorable position again. In playing, these factors normally lead to the gunlance player taking on the role of the so-called *tank*[25], trying to gain the monster's sole attention to enable the other players to consistently attack and cause damage.

Monsters exhibit different levels of vulnerability regarding different parts of their body to different weapons such that each weapon type, more or less automatically, pushes its player to attack certain parts of the monster, ultimately with the goal to 'break' or sever certain body parts (usually horns, tail or claws) which, in return, give more and better rewards upon completing the quest. As a gunlance-player and tank, I always aim to attack the head of the monster and, thus, I spend most of the time face-to-face with it. Another fundamental weapon goal in playing the gunlance is to use the so-called 'Wyrmstake': If I manage to perform a specific combination of attacks without being interrupted, my last attack will attach a stake to the area of the monster that was hit. Hitting this stake again with a shot of my gunlance will cause an explosion and excessively more damage to the monster. Given that the Wyrmstake can only be used at the end of a combination of several attacks, this can be very difficult, as my own timing and position have to be perfect in order to avoid being hit and consequently interrupted by the monster. Once the stake is successfully stuck into the monster, it will persist only for a few minutes, making it paramount to land shelling attacks (i.e., the gunlance's main form of attack) in this time. With an increasing progress into the game, monsters become increasingly stronger, faster and more difficult to slay. Even though I know the movesets of monsters from previous encounters, on the highest difficulties, fighting the very same monsters becomes an intense challenge in which I often have to resort to blocking attacks and to defend for most of a hunt, barely being able to attack, much less to pull off a combination.

Playing gunlance feels best when doing a quest together with other people. It, therefore, rarely happens that I undertake a quest on my own, as most of the time I play together with my brother. Since both of us have played the game for a long time together already, our cooperation is quite incorporated: Both of us use weapons that complement each other, I play the gunlance, my brother the Double Blades (which allow for a lot of speed and mobility). In 'tanking' (i.e., gaining and sustaining the monster's aggression), for example, I know my teammates will attack its tail and legs in the meantime. Given enough time, the monster eventually falls down and I am able to deploy my Wyrmstake in an optimal position.

[25] A tank denotes the player's role within a group given their weapon and armor to be mainly responsible for defense, luring in the enemy to focus attacking only on them.

Being engaged in battle, it feels like the presence of the other player(s), however, vanishes into the fringes of my awareness. Instead, I am focused on the continuous demands for action which I enact with my fingers on the gamepad. Once the monster starts focusing on me, I fall into a rhythm of evading, attacking, blocking and repositioning in response to the monster's attacks. It is in these close-combat encounters during a hunt in which I feel like I am performing at my best, and it is only when the monster disengages or lands an attack I have to block in which this rhythm is disrupted and I have to start engaging anew[26]. Of course, at other times, this coordination of myself together with the other teammates can also fail spectacularly which, to me, is the case just as often as it works out successfully. While entering into a state of flow is comparably easy for me in MHW, falling out of it is often equally as easy to happen: Even blocking, although it is part of the playstyle using gunlance, disrupts my experience of flow, as my player-character is pushed back and out of the engagement with the monster. Sometimes, it is exactly during the instances of flow I experience in which I suddenly forget to attend to my player-character's health points and die, as I do not notice the damage I take. To me, the experience of playing gunlance is characterized by an alternation between close-combat engagements with the monster, on the one hand, in which I dynamically change between hopping and attacking and where flow arises most often for me and, on the other hand, the disruption and re-engagement after being hit, or having to chase the monster. Sometimes and even though I feel that I play the game rather well, some particularly difficult quests can also be extremely frustrating as It took several sessions to complete some single hunts.

Having played the series of video games for a long time, I am fairly confident in my abilities playing the game and two of its main motivations for me, personally, are that I can play it together with my brother but it also regularly makes me experience a flow state while playing. Specifically, I feel that I am 'in the zone' most often in the up to a few minutes long direct combat encounters with a monster throughout the hunt. When I fight a monster using the gunlance, I have an intuitive awareness for the monster's movements, as they often signal specific attack patterns, but also of my own positioning in relation to the monster. This includes both, my position to land effective attacks on the monster as well as to minimize the possible angles with which it can hit me. Doing so requires an intense focus on the details of the monster's movements but also of the timing with which I attack and evade. As a

[26] See https://youtu.be/6m28dxIvmXI (Retrieved 06.04.2025) for a difficult but successful hunt of the author in MHW, using the gunlance and playing in a team of four people.

consequence, I often become unaware of my surroundings such as my teammates or health points which are only abstractly represented on my screen (see Fig. 5.2). While I could not enumerate a specific monster's attack patterns in a descriptive way, I fought most of them so often that I intuitively know how I have to move in response to their movements.

Figure 5.2: Fighting with the Gunlance in MHW. The author's player-character is reloading their gunlance (visible in the slight angle of its tip) right before engaging in combat with the monster (the glow around the player character is not of importance to the weapon or its loading and a result of other gameplay mechanics). The bottom left shows a miniature map of the surroundings. The top left shows the health bar (green) and the stamina (yellow) of the player character. A health bar for the monster does not exist in-game. Below the player's status, to the left, are the names of team members and their respective health bars. (Source: Screenshots by the author from the video game *Monster Hunter: World – Iceborne* (2019))

As I routinely play the game, experiencing flow is comparably easy for me in MHW. As I have an intuitive knowledge of the range and timing of my and the monsters movement. Still, I will always have quests available to me that I find very difficult and where I have to bring the best of my abilities in order to survive. A very motivating factor in playing MHW is that I can do so together with my brother, which also contributes to the joy I get from playing the game.

5.2 Sports

In contrast to gaming where I spend my time usually in front of my computer, occupying the same space, when doing sports, the environment in which I move with my corporeal body plays more of a key role. Strapping the snowboard to my feet or putting on my fighting gloves, mouthguard and shin protectors both instantly affords a very different way of movement that feels *inefficient*. In standing sideways on the board with immobile feet or in the padded knuckles and shins that constrain the own unhindered movement all of these tools do not feel right, as I cannot move as fluently as I would without them and 'normally'. Once entering the slope and starting to ride down the mountain, or as soon as it comes to striking, this feeling changes into an experience of relying on exactly these inefficient forms of movement and the artifacts that afford them in order to perform adequately.

5.2.1 Case 3: Snowboarding – A Downhill Ride

Personally, I have been practicing Alpine sports since the age of five, when I started skiing. At twelve years old, I decided to try out snowboarding, immediately preferring it over skiing. Since then, I have been snowboarding in the winter season almost every year, I took several educational courses but also acquired a lot of knowledge autodidactically and specifically with the help of educational content on the platform Youtube, most notably through the channel '*Snowboard Addiction*'[27]. Doing so not only provided a valuable resource for free, educational content but also worked to sustain my motivation by making visible where I personally stood regarding my skill level, showing me skills that I could still learn and aim for. In addition to its educational value, the snowboarding content found online represents a contemporary landscape of how snowboarding as a culture is practiced and imagined: These imaginaries range from professional athletes risking their lives in the *backcountry*[28] (i.e., the most untouched, secluded and visually stunning landscapes), all captured in ultra high definition and high-tech filming equipment, to so-called *street parts*[29], in which tricks are done in the most creative places in cities and urban areas. These movies and video parts represent a public image of snowboarding culture and, as such, they add to the passion and motivation for the sport, as for many, snowboarding is a sport that is not easily practiced, spatially, temporally, financially and ecologically. For 10 days in the beginning of the year 2024, I took the educational training for the first of three levels of an official instructor under

[27] https://www.youtube.com/@snowboardAddiction
[28] for example: https://www.youtube.com/watch?v=ZTAAaKFsLGA&t=622s (Retrieved 06.04.2025)
[29] for example: https://www.youtube.com/watch?v=mO5TbSNbMXc&t=18s (Retrieved 06.04.2025)

the Austrian Snowboard Association (ÖSV)[30] which considerably deepened my understanding of and skill in practicing the sport. While I practice snowboarding as a hobby, i.e., with no professional demands to myself, and further, only once or twice every season (there was considerably more snow in Eastern Germany 15 years ago), it certainly is among my favorite activities to practice, not just as a sport but in my life in general. The experiences described here focus on the educational training, as well as on my two most recent snowboarding trips which took place in December 2024 (one day) and in March 2025 (four days). Since I went into the second trip with an injury, I had to restrain myself from attempting any jumps and tricks[31]. The descriptions featured here, therefore, will not feature any such aspects, instead focusing purely on the aspect of the downhill descent on the board. A single descent, i.e., slope, from top to bottom of a mountain can – depending on its height and difficulty – take between five and thirty minutes, although, I normally stop several times on a single descent to orient myself, enjoy the view or catch a breath.

The experience of snowboarding – to me – is a form of engagement with an, otherwise, inaccessible environment which only emerges and unfolds dynamically in its enactment. Putting on the – for walking rather impractical – snowboard boots and strapping them into the bindings screwed to the board affords only a very specific, yet familiar way of movement. Sitting uphill on the slope and having strapped the boots into the bindings, however, the sideways and fast motion that I know is waiting for me seems much more appropriate than walking or any other means of travel, at least in order to get down the hill. The goal of any snowboarding activity is to descend an angled, sufficiently snow-covered surface from beginning to end. In order to do this in a controlled, aesthetic and appropriate way, the snowboarder must, first of all, possess the bodily ability and skill to execute the motor patterns that afford this. Fundamental for a controlled descent in this is the dynamic adjustment of bending the knees by alternating between turns but also doing so in response to the unevenness in the terrain. Bending the knees and spatially stabilizing the upper body to retain its vertical position in space – as in: not getting kicked into the air by small bumps in the terrain, as well as not taking the impact of the holes usually following these bumps – all under considerable speed.

Before starting my descent, I have to walk a few steps out of the lift that carried me up the mountain and toward the beginning of the slope that I will ride down. Until here, I carried my

[30] www.ösv.de
[31] the main aspect of so-called *freestyle* snowboarding

board with my arms, but now I throw it on the ground with the bindings facing upwards, then I step into my bindings, fasten them around my feet and I am ready to start my ride. Once I start my descent, I engage and tighten my core and legs and start to feel the terrain through my boots, bindings and board. To get into the bindings, I faced the slope with the width of my board, but in order to start my descent, I now have to turn such that the tip of the board and my left side face down the mountain. I shift my weight to my left foot and rotate my upper body to the right, until I start to turn toward the slope and to move forward. I continue to hold my torso in rotation for a while until I am turned toward the slope sufficiently. Then, I release the rotation and align my shoulders with the length of the board again, spending a few seconds in the fall-line, getting ready to actively engage, until I gain considerable speed.

As soon as I feel fast enough, I start to shift my weight onto my heels, digging into the snow with the edge of my board and engaging in the first turn of my descent. The first half of a turn is always accompanied by increasing gravitational force which is strongest at the curved vertex. In order to counteract it, I increase the board's friction in the snow by putting more weight on my heels and steer the board along its torqued edge. Thereby, I gradually lower my body weight as if preparing for a jump. Then, finishing the curve and crossing the fall line, I have to lift my body weight again, almost as if jumping, and shortly releasing any weight friction on the snow. This allows me to switch the edge and initiate a new turn on the opposite side, repeating the whole sequence. On a heel-side turn, the field of view will gradually open up down the slope and to the valley. In doing so, the toes are pulled up, my own weight is shifted backwards onto the heels and the hips are brought back, as if sitting down on a chair. This leads to a digging of the heel or backside edge into the snow. The higher the speed while doing this, the further I can lean backwards, as the pull to the outside of the curve becomes much stronger. On a toe-side turn, I gradually face the hill and bend the knees over the toes, shifting my weight onto my toes, lifting the heel-side and digging the front-side edge into the snow. In the beginning, for the first few turns, I have to consciously focus on every single of my movements. Once I ride for a while, however, I increasingly feel how to time and perform these movements such that they converge into a rhythm of alternating curves.

As I initiate a turn, I look for the unique feeling of the edge finding – and ‘locking’ into – the snow, upon which I myself try to shift my weight gradually down and further inward into the curve in an act of actively balancing out against the pull that starts building up. Establishing a rhythm of shifting body weight simultaneously vertically (bending the knees over the toes or ‘sitting’ in the air) and horizontally (leaning toward the center of a curve) with the right

timing is not an easy task. Once, I manage to carve down the slope like this, especially in deep snow and off-piste terrain, however, it rewards me with a feeling of ‘floating’ on the snow. Trying to maintain and perform the right position, execution and timing of this shifting of weight over time is extremely exhausting, yet satisfying. Riding and alternating between turns such that I am ‘guided’ down the slope in an S-shaped path by the gravitational forces, especially at very high speed, demands my utmost concentration and physical strength, as a mistake will lead to a hard, potentially injuring fall.

Figure 5.3: Snowboarding down a mountain slope. The author is on the descent, right before initiating a heelside (backside) curve on their snowboard, turning their shoulder downhill and pushing out the left knee. Next to the rider, the scene shows the lift (to the left) transporting several people to the top, and the full extent of the (rather small) slope from top to bottom. (Source: Photograph of the author in March 2024)

It is in these moments of utmost concentration and bodily control in which everything vanishes from my thought. The chaining together of toe-side and heel-side turns, therefore, necessitates the rhythmic interaction with the pulling forces that affect and shape movement while riding. During that, the whole body is continuously engaged in overall oscillating movement. Attention, however, is much more on the dynamically changing environment. In order to ride smoothly, I have to bring myself into a position in which my continuous movement can be sustained without breaking my rhythm. Most of the time, especially in

uneven terrain, I still have to constantly adapt my movement in response to the changing environment on a minimal scale in order to maintain it. Doing so most of the time almost completely absorbs me such that there is only the movement and changing ground which I traverse. The only notion that holds my attention is my own body, the board and the slope in their continuous interactions, as I am riding down the slope. At some point, even the rhythm of my curves moves into the background of my thoughts and I do not think about the overall movement at all. Instead, I closely monitor my path of travel and how ready I feel to react to specific locations on it once I reach them. As I am making my way down the hill – with more or less speed depending on the weather conditions, my own mood, and the number of other people on the slope – and as my awareness is focused on my reactions to the pathway I plan out, I start to feel the exhaustion of my muscles grow, until every movement is accompanied by the aching of my muscles. Despite the cold temperatures, partly because of the many layers of clothing I wear, I start to sweat and it gets almost uncomfortably hot. As long as I am riding, however, the only thing I can do is put all my focus and bodily abilities into going as fast as possible while still being able to remain in control. This focused attention is only interrupted when I fall, due to a wrong movement, when I have to suddenly brake, evade an unforeseen or moving obstacle in my path, or when I arrive at the bottom of the slope. It is in the minute long periods of concentrating only on my movement on the slope, where I also lose the distinction between my own moving body, the board on my feet and the slope on which I glide. All three converge together in my movement and push out everything else from my mind, as I move down the slope in flow.

This – to me – makes snowboarding an activity of ‘moving along an edge’ not only literally but also figuratively: An effective and controlled ride presupposes a minimum of speed that, in turn, provides the necessary stability and gravitational force that has to be engaged by the rider. Such a level of speed, however, also implies the severe risk of injury, as well as it demands an ability to fine-tune one's own movement and dynamically adjust to an only semi-predictable environment. Thus, the other, more implicit, yet also more imminent and experientially foregrounded, ‘edge that is traversed’ is the thin line between an appropriate bodily performance and a potential for grave consequences emerging out of comparatively minor mistakes. Together, body, personal skill, technical characteristics of the board, environmental conditions and terrain make for a highly demanding, complex and dynamic form of sense-making in which the demands on the above biomechanical and motor patterns have to be implicitly known and adapted to in real time and by ‘laying down an appropriate

path' while riding it. If done right, riding feels like being 'automatically' pulled around the curve by leaning against the centrifugal force, as if connected to a pole held by a rope and following the circle the string would allow at maximal extension until the fall line is reached and the alternate-sided turn is initiated.

Snowboarding, as an outdoor sport, is practiced in a fast-changing, dynamic and often risky environment which can only be understood 'in the ongoing moment'. I may be able to look at the slope and plan my advance, but as soon as I start gliding down, I only have minimal time to do so. Instead, staying in control demands me to engage with my board, continuously and in response to the changes in the environment. This makes snowboarding an excellent activity to experience flow for me. To me, it is an activity that almost demands of me to engage with it through the experience of flow, as the danger but also excitement of the high speed push me to intensely focus my attention on the interplay between my movement, the board and the ground I glide on.

5.2.2 Case 4: Mixed Martial Arts – Technique and Sparring

Starting out with Kickboxing and Muay Thai at the age of 14 years, my first contact with MMA was long before I began practicing it myself in the form of consumption of the public broadcasting of the large online and television media landscape that emerged over the last decade. Most notably, here, are the promotions UFC and One, both being institutional to the sport and retaining an especially large impact as entertainment media. While I had engaged with the public media around MMA as sport and entertainment for a rather long time before, I decided to visit an MMA gym for the first time during a half-year long stay in Ljubljana, Slovenia, in the year 2022. After that, I joined a gym in Vienna, Austria, where I trained for roughly one and a half years, with a focus on getting to know the basics of wrestling. Finally, in 2024, I trained for half a year in a club in Leipzig, where I further had the opportunity to engage with practicing BJJ. In all of these gyms, I was regularly engaging in stand-up kickboxing training and general training of strength and endurance independently of fighting. While the sport can be seen as an institutionalized form of interpersonal violence, when I train, I paradoxically experience MMA as the opposite of trying to inflict pain on the person I train with. It is on only a few occasions, such as a hard sparring session or a competitive fight, where combatants actually try to seriously knock each other out. One of the necessities to train any combat sport in a sustainable manner is a particular culture of social interaction and solidarity within the gym and between its members and trainers, forming a very tightly knit community.

The view that I formed throughout my history of training is, thus, that MMA and combat sports in general are not necessarily about inflicting violence – although they certainly instrumentalize it – but about overcoming an athletic challenge that demands all of my own bodily and mental capacities at once. I have to remain physically, emotionally and cognitively in control of myself under the highest possible pressure on my body that I can manage. In all gyms I trained, actual fighting made up only the smallest part of training, and if it took place, it was in the form of *sparring*[32]. An equally large part of my personal experience of activity during training is that of training techniques, power or general strength, and endurance. Besides being a class of its own, sparring is often integrated in a minor form at the end of another 'normal' training session, whereas it is an integral component throughout the wrestling class. One training session, on average, consists of one to two hours including the sparring (if it takes place). Depending on the day of the week, I can anticipate how exhausted I will be at the end of the regular training even before starting with it. If today's schedule focuses on wrestling, I expect to be barely able to stand afterwards, as I have the least experience in it. The same goes for sessions focusing on general strength, where it does not matter how fit I felt before, I always reach my bodily, constitutional limits during the session. While training the technique will also be quite exhausting, it never leaves me lying on the ground as drenched in sweat as the sparring in wrestling, or strength and endurance training do. Given the limited scope of this work, the experiences described here will be confined to a session of technique training as well as a session of sparring.

Training MMA fundamentally demands a rigorously followed routine: In every gym I visited, the weekly but also the daily training regiment was – without being boring – extremely repetitive. No matter which day of the week I come to training, the beginning is always the same. After a formal greeting between all training students and the trainer, we start to warm up. I turn to the side and start to run circles – together with all the others – around the extent of the gym. After a few rounds, I take up small weights and continue running, but now I have to hold up my arms or box into the air with my weights. It does not take long until my arms feel heavy, even though we just started the training session. At some point, at around fifteen minutes containing another few exercises, we are finally allowed to put away the weights and the real training starts. At this point, I am already breathing heavily, feeling extremely hot and my T-shirt is starting to get wet from sweating.

[32] Sparring means simulating a free-fight but introducing rules to ensure minimal risk of injury.

If we train techniques, I will train with another person with whom I will start to alternate in enacting sequences of techniques or having to defend against them with another technique. As I know exactly which movements to enact as well as not to go 'full-power' (as both of us wear minimal protection), this part of training feels closest to a choreography. Nevertheless, over time, me and my partner will start to 'get into it' and become increasingly fast and powerful. Thus, I also have to progressively focus on my specific movements as well as on timing them in response to my partner – even if I know what my partner will do. At some point, our alternation of attacking and defending takes on a rhythm that is fast enough to let both attacking and defending seamlessly flow into each other. During this time – normally not longer than three minutes – my focus is solely on the repetitive alternation between attack and defense, as well as establishing and maintaining a rhythm in this alternation together with my partner. After a while I will start to feel the exhaustion in my body, as maintaining my speed and power becomes less and less effortless. As this feeling of exhaustion becomes stronger, the only thing I can do is to push through my exhaustion and concentrate on the strength of my movements. At some point a bell rings and we stop and can take a necessary break, before moving on to the next technique. At some point however, I feel like I get used to the exhaustion and we fall into a more moderate rhythm that we manage to maintain throughout the following exercises as well.

Over time, I also feel increasingly able to focus on my own and my partners movements, including their individualities in execution and timing of the technique, enabling me to move more efficiently and securely as well. Then, after a while in which I barely think about anything but the movement that has to be done right now we are told to stop. I know that training is almost over now, and at this point, I am thoroughly drenched in my own sweat. Although I still have energy left, the last 15-20 minutes of training will always be a last push to my limits and consist of several rounds of striking the boxing bag, alternating with doing push-ups and squats. In these last minutes of training, I always push myself to exhaustion in which I focus only on the bag in front of me, moving together with its swing, while executing a series of hits and kicks every other moment. During this last part of the training, time seems to slow down, as the only thing I do is to focus on bringing up the power to enact another combination of strikes on the bag. While this gets harder with every single sequence I do, my concentration and will to continue become harder and harder to sustain, until at some point our trainer calls us to stop and officially ends the training. Once this happens, I often lie on the ground instantly and do nothing for a minute or two, as I can barely stand anymore. At the

same time I feel incredible relief of having endured the challenge of this training. After a while I get up, pack my stuff, formally bow out to the trainer and do ten last pull-ups at the bar next to the exit and leave with a satisfactory feeling of having almost no power left at all.

Sparring often starts at the end or after a session of training. Sometimes this takes place in the ring, but if many people participate it will take on the mats where the place has to be shared between everyone. A session of sparring could take between 30-60 minutes and will mostly consist of 3 minute rounds. Personally, throughout all my training I try to avoid hard sparring, as it implies the potential for serious long-term damage to the brain[33]. Thus, especially in the domains of striking – where I feel more proficient than in BJJ, wrestling or grappling – I mostly focus on sparring very lightly and generally attempt to only 'touch' my opponent with my strikes and to not escalate the session by hitting harder and harder. As a sparring session begins, I look around me – as everyone else – and per eye-contact and a nod 'ask' somebody if they would like to spar with me. If they agree, we shake hands and wait for the signal to start the round. Once the bell rings I bow and touch gloves with my opponent again. Assuming my general fighting stance, I take a medium sized step forward with my left foot, turn slightly sideways, slightly bend my knees and distribute my weight evenly among my feet, with my hip centered between them. I pull up my hands and cover my temple with the gloves, pull my shoulders up and tuck my chin onto my chest. Following these first few seconds, in which I become intensely aware of my movements, as well as those of my opponent as we both assume a position of readiness to engage, we start moving and circling each other. During the beginning of sparring, my intention is to get to know my opponent and to get a feel for their timing and movement.

The only way I can judge this is by observing how they move neutrally, when attacking and when retreating. After a few further seconds, I start to throw a few single kicks or punches, in order to get a reaction out of my opponent. As they do the same, I also have to start blocking and evading. Quickly these single kicks and punches develop into combinations and at some point we fall into a rhythm of short, explosive bursts of engagement in which I attack and/or try to defend myself, then disengage by increasing the distance between me and my opponent just to find an opening to engage with them again. Later on I will start to feel the weight of my arms and they slowly drop from my temples to my chin, as I have to remind myself over and over to pull them up again, despite their increasing weight. In the beginning of a session

[33] Several neurodegenerative diseases are linked to the prolonged exposure to trauma to the head in combat sports (cf. Briles 2014)

however, these engagements of pure striking (i.e., kicking and punching, without grappling or wrestling) are where I feel confident. Once I feel like having established a rhythm, it happens almost automatically that my attention pushes out everything beyond my immediate surroundings.

All I perceive now is my opponent, my own movement, but also an intense focus on 'staying ready' to change my own – and per extension my opponent's – movement in another direction. I have a feeling for the distance between us, which I judge only through both of our movements: My movement happens in response to and interaction with the movement of my opponent and I feel when and how to move because they move a specific way, both in order to land a strike and in evading or blocking. At some point my opponent themself – as a person – seems to vanish and exist only in their bodily position, movement and rhythm that are understood through my own movement. Being in a 'good' position (i.e., one in which I can strike without being struck myself) is one that makes it easy for me to move out of it again dynamically and without effort. Similarly, knowing how the other can move is possible by moving in a way and into positions which determine a range of action by the opponent.

Figure 5.4: The author while competing in a Muay-Thai fight. Inside the ring, the referee is depicted to the left, the author in the middle, and the opponent to the right. Both fighters are wearing the appropriate gear and are fighting within a standard boxing ring. (Source: Photograph of the author in September 2018)

During these rounds, all that exists for me is the single complex of interactive movement enacted through me and my opponent and even if I am close to my limit, this narrowed focus only broadens again, once the bell rings and the round ends. To engage in abstract reasoning, or the construction of detailed plans for action sequences to execute, is – even in such a 'mock'-fighting situation – mostly impossible to me and further, quickly starts to feel rather unhelpful. MMA taught me a very physical way of knowing myself through my body and ability to move. The nature of the sport necessitates an intimate knowledge with my own bodily potential for movement, as well as power and control over them. Over my time of training I feel like I acquired not only an intricate sense of my bodily range of motion, reach, proprioception and biomechanical contingencies to enact purposeful, athletic movement patterns, but also a level of calmness in the face of the threat of receiving pain and an ability to channel my emotions and ego in an intentful and controlled manner. Knowing how the opponent can and will move also depends on the own knowledge of how a body can and is supposed to move, i.e., how one is able to move oneself (assuming a relatively equal level of athleticism and ability in the contenders). Both sparring, as well as technique training in MMA provide settings that force me to put up my utmost concentration, awareness and athletic ability. Once the bell rings and the sparring round starts, or once I get into a fluent rhythm in technique training, my field of awareness shrinks down to only my and my opponents or partners movements to which I continuously have to react, but which I can also influence through my own actions. It is especially in the periods of time in which everything happens so fast that thinking about what to do – in an abstract sense – does not make sense. All that I can do in these moments is to participate and try to shape the ongoing, interactive movement of bodies taking place.

In MMA, anticipating the next moves and actions of the opponent can be incredibly difficult and only approximated, even if one is on a relatively equal level of ability as the opponent. Yet, for me it is exactly the incredible tension and the imminent danger that demand my constant and dynamic action and reaction. Trying to predict my opponents moves and at the same time to make my moves unpredictable, happens without my conscious thought about it, I simply move, as I feel is right in response to my opponent's movements. In the most intense situations of sparring I experienced, everything but the interdependent movement of my own body and that of my opponent is pushed out of my awareness. The distinction between having to defend myself against the incoming attacks and trying to outsmart my opponent and land attack myself blurs at some point, as both activities dissolve into each other.

5.3 Summary of the Case Studies

The four cases described here encompass a broad range of different modes of game playing. All of the activities are personal hobbies of mine such that I have a certain level of proficiency and expertise in them that may, however, vary between the activities of the different cases. I chose them as cases for this work, partly because of this level of expertise and because I knew how immersive they are to me. All of the cases were chosen because I experience flow in them, allowing a comparison between them in order to analyze their structure in relation to each other. I experienced flow in both of the video game cases, ER and MHW. However, due to the difference in my level of ability in each game, the ease with which I got into flow differed a lot.

While I 'only' have to rely on my fingers in order to act, doing so in a skillful, near-optimal way in ER is much more difficult for me than it is in MHW, which I play much longer already. A crucial difference in combat between MHW and ER is that combat in ER heavily emphasizes stamina management – with the enemies aiming to force the player to use stamina defensively and the player aiming to use their stamina offensively in attacking and causing damage to the enemy. In Monster Hunter, the challenge is less in the management of the player's stamina as a resource but rather in how effectively the player is capable to instrumentalize the benefits of their weapon of choice, with the monster trying to disrupt the player's ability of fluently and consistently attacking. There were only a few occasions where I really felt like I was in flow. On my last attempt, in which I beat Malenia, I only noticed afterwards how absorbed I was before in the action of that attempt, as the feeling of utmost concentration during the fight contrasted against its relief and feeling of achievement I felt directly afterward. Monster Hunter, on the other hand, is a game that I play partly because I know I will experience flow, as I have a lot of practice in it, while the game always manages to retain its challenge for me. Snowboarding and MMA are wholly different, general modes of movement and sense-making. In snowboarding, I generally have to control my high-speed gliding descent, whereas in MMA, I have to engage in unarmed combat including striking, grappling and wrestling. While I have practiced MMA only for a few years, I do not feel proficient in certain aspects of the sport (e.g., in wrestling), but I feel competent in others (e.g., in thai-boxing). In both sports, there is an inherent danger of injury which forces me to maintain concentration on my performance.

In all of the cases, flow unfolded in rather short durations (in comparison to the duration of the respective activity), or rather, it was interrupted by periods in which I was not in flow. Further, I generally experienced flow when the situation demanded me to continuously engage in movement while being challenging on a level that requires my complete attention. The bodily tension of ‘barely being able to maintain control’ was present in all of the cases as well. Establishing a certain rhythm helped a lot in concentrating and maintaining a stable performance.

6 Discussion

The previous chapter presents a comparative analysis of several video-game and sports-game experiences by taking into account their constitution as a specific, technologically mediated engagement between a subject and the world. Following the postphenomenological approach by Don Ihde (2012, see chapters 3.2 and 4), the discussion of this analysis should entail at least the dimensions of material form and structure of the technological artifact, the embodied practice and sense-making afforded by them and, finally, the sociocultural background situating the experience of flow states during these activities. In order to answer the research questions posed in the introduction of this work, these dimensions shall serve as a framework that allows for a connection of the experiences described here and the structure of the flow experience as described by Csikszentmihalyi (1975; 2002).

All experiences described here are situated in a practice of recreation and as a hobby (i.e., neither competitive, nor professional). Nevertheless, they are also experiences made with years of practice and probably an above-novice level of ability. They are, therefore, inherently personal and subjective and cannot be generalized over all individuals exposing themselves to the same environments. Since the experience flow – and really any other form of phenomenal experience – itself is conceptualized as inherently subjective and personal, the only way to explore the phenomenon is through the activities which afford this experience to a specific, individual subject (MacIntyre et al. 2019, p. 630). Choosing the activities that are analyzed autoethnographically here as environments to situate the experience of flow is, therefore, necessarily tailored to my own personal situatedness and history with these activities. However, it is in these personal and individual preferences of activity, where one can also find the aspects of flow that are already empirically established and, therefore, generalizable, as shown by Csikszentmihalyi (1982). Thus, while other individuals might not experience flow in the described activities, or might experience other aspects of it, they might also experience it in completely different forms of activity and modes of action.

The first research question – *What are the affordances and constraints shared by contemporary sports and video games that contribute to the experience of flow states?* – asked in this work is to establish a common ground between the domains of sports and video games. Explicating the specific, shared characteristics of human-technology-world relations (Verbeek 2005, p. 117) manifested in the games explored here, will allow for the construction of a typology of affordances that facilitate the experience of flow in these systems. This

typology will be further engaged with, in order to bring to light how exactly they benefit and enable the experience of flow states, answering the second research question of *how and why exactly these affordances and constraints enable the experience of flow.* Lastly, having an overview of the shared affordances for flow experiences across digital video games and traditional sports – as well as their contribution to the flow experience – will allow an analysis of the question of *if and how these affordances and constraints also contribute to the convergence between traditional sports and digital media.*

Following the literature and thorough study of the flow experience, this section will approach the main characteristics of the flow experience, as found in the described cases. More specifically, these cases provide a range of lived examples that show how exactly these experiences emerge through a complex entanglement between thoroughly embodied modes of sense-making and understanding, specific forms of structural sensorimotor coupling between technological artefacts, the body and a dynamic and overall very challenging environment. The analysis, discussion and reflection is organized into four general clusters of dimensions (i.e., a range of phenomena collected and categorized under an encompassing term) constituting the experience of flow following Csikszentmihalyi (1975, 2005). Each of these clusters will be considered under the light of a postphenomenological investigation and regarding their manifestation in the described games in this chapter. The four clusters are:

1. ***Autotelic engagement*** **–** The joy in practicing, but also the virtually infinite potential to improve one's own ability to skillfully cope and the social identity emerging out of this.
2. ***Dynamic, complex environments*** **–** The creation of dynamically changing, complex and cognitive-motorically very demanding environments and the autotelic transformation of experience.
3. ***Control and direct feedback*** **–** Clear goals, feedback and the ability to control and shape the environment and, at the same time, having to adapt to it.
4. ***Loss of ego*** **–** The narrowing of attention onto the own bodily performance, the merging of action and awareness and the loss of identity/ego.

From an enactivist perspective, the experience of flow is constituted in the embodied dynamic, mutual interaction between a subject and the environment at an 'optimal' level of performance – whereby optimal denotes not an abstract ideal of performance, but the *subjective experience* of performing at the peak of one's own abilities (Csikszentmihalyi

1982). Part of this experience is also constituted by the mediating role of technology in the activity. Games, in general, as designed, codified institutionalized and historically consolidated forms of play (Huizinga 1998 p. 13) will mediate the experience of the world for their players and consumers affording specific modes of action and sensorimotor coupling while constraining others, thereby creating a unique experience that is understood primarily through the range of action that players can enact in them (Maturana 1987, p. 75). When it comes to the experience of flow, games (digital as well as analog) feature an intentional design which will usually exert a 'pull' on the player into specific movement and action patterns that can enable the flow experience (Noë 2006). The following section will further explicate these affordances and constraints and in which ways, specifically, they are constitutional to the flow experience. Going into the typology that follows, it should be noted the clusters defined here are – in many aspects – overlapping with each other and, thus, should not be seen as definitive and exclusive categories, but rather as general dimensions that interact with each other: Flow itself is a holistic phenomenon which emerges in this interaction.

6.1 Autotelic engagement, Joy and the Ability to Improve.

The first cluster encompasses the aspects that structure the autotelic relationship between player-system and game-system, i.e., the specific structures of a game that motivate players to accept their rule system, enter the magic circle (Zimmerman 2012) and sustain this motivation over the duration of the game. In the technological-material structures they are realized as, both – sports and video games – provide robust systems of rules that fundamentally *re-orientate* the experience of players upon accepting them. In the here described video-games, this reorientation unfolds through an in-game world that, due to their immersiveness and believability (McMahan 2003), make it easy for the player to accept them as real and create a world that distinguishes itself from ordinary reality. In the described sports, on the other hand, instead of creating a whole new, digitally enacted world, the experience of material, natural environments (e.g., the mountains) is fundamentally transformed by enabling alternative ways of embodied interaction with them (Thompson & Varela 2001).

Notably, the establishment of alternative rules – in all of the here explored cases – is constituted in either or both, in the material, technological artefacts themselves, the specific ways of movement their use prescribes (Akrich 1992) and the additional introduction of

abstract sets of rules that define the range of allowed action (Suits 1978). In voluntarily accepting these roles and/or exposing themselves to the specific, embodied experience afforded by the technological artifacts that are part of the game, players willingly transgress the experiential structure of ordinary life (Di Paolo et al. 2010). Importantly, it is the reciprocal relationship between a subject's autotelic motivation to 'enter' the world of a game and the subjective, perceived affordances to *enjoy* the bodily engagement with the game's world. This enjoyment is closely linked with the experience of flow: Flow itself seems to be an inherently joyful (but not necessarily pleasurable) experience. At the same time and in co-constitution, flow is mostly experienced while engaging with subjectively enjoyable activities (Csikszentmihalyi 1975).

While the specific human-technology-world relations are often *multistable* (Ihde 2012) and can constitute strikingly different forms of experience for different individuals, the underlying experiential structure of the flow experience can be traced throughout all of the cases: All of the here documented gaming activities enable the experience of alternative worlds that challenge their players in a cognitively and physiologically demanding and complex environment. Depending on the specific game, this challenge will emphasize specific modes of bodily action (e.g., in fighting, gliding, or the complex hand-eye coordination at play in video games). They do so by way of different, but equally immersive and interactive demands to the players' athletic and reactive skills and abilities (Jon & Kennedy 2006, pp. 6-7; Salen & Zimmerman 2003 pp. 10-11). Further, they also do so in a way that theoretically leaves to the player an infinity of expression of individuality (e.g., choosing a certain build in a video game, emphasizing a specific discipline in fighting, preferring a specific style of snowboarding). All cases looked at in this work feature a formal system of optimal movements, allowing to identify a range of cues and affordances to assess one's own ability and skill and to isolate specific aspects therein and train them, although these idealized forms themself are never realized in such an abstract form.

Experiencing flow depends to large parts on the player's own perceived ability to perform in the game-environment and in all of the described games (Csikszentmihalyi 2005), training over long periods of time (e.g., practicing the execution of specific motor and action sequences) is not only a necessity to get into flow, but also to be able to play any of the here explored games and sports in the first place. The frustration of failing that is inherent to this as well does not necessarily take away from the motivation to engage with the challenge. On the contrary, it functions also as a motivating force that enables one to become aware of one's

own shortcomings and provides specific cues to improve and develop the own motoric skill set and individual play-style.

All of the sports and video games looked at here transform or create – in playing them – the experience of an alternative reality which can only be made sense in engaging with them through the specific mode of action they prescribe. A fundamental aspect of them is the joy they provide in these prescribed forms of action, as they emphasize specific aspects and characteristics of the environment they take place in, while omitting others and excluding them from the player's space of perception and action (Fernández-Vara 2024 pp. 124-125). While the possible space of action is, of course, much more limited in video games in comparison to risk and adventure sports, both types of activity consistently manage to immerse and motivate players to step into the magic circle they are situated in. Video games do this by creating worlds that only exist virtually, or through a form of digital mediation. Yet, they are carefully designed worlds which are immersive enough to temporarily 'believe' in them (Coleridge 1817), while they provide experiences and narratives that are fantastic, fictional or otherwise impossible to experience in 'ordinary life'. Risk and adventure sports, on the other hand, transform existing environments such as the mountain or a simple sporting mat in a way that mitigates the risk of the experience of otherwise life-, or at least health-threatening experiences to an acceptable degree.

The motivation to engage voluntarily in the act of playing a game, as well as the joy that it provides are further – even if they are played alone – socially embedded. One of the main trajectories on which the overall experience of video games and sports converges, are the social structures that emerge in and around both over time and, especially, through contemporary digital media constellations. The specific level of motivation – itself subject to change but also able to change the subjective experience of an activity (Cappuccio et al. 2021, p. 616) – that any game or sport is engaged with will be a fundamental prerequisite to experience flow, as much as joy itself, in them (Csikszentmihalyi 2005). All of the cases – to a large extent – feature strong communities, mediated and connected through a range of contemporary, digital media channels, in which content from and about the game is shared, exchanged, discussed and commented.

This complex extends – to different degrees – from in-game interaction, cooperation or competition with other human players to the discourse that does not take place in the game but around it (Consalvo 2009). The experience of training MMA – while it is not possible

alone in the first place – will be much more sustainable and, more importantly, safe in building a social connection and shared identity upon which there is a mutual appreciation and care for the co-practitioners. Being able to care for oneself and others in such a way necessitates not only an embodied knowledge of the potential implications of such institutionalized violence but also a level of consolidation of ingroup identification and appreciation. Being able to share and reciprocally increase one's own passion with a group will certainly positively impact the joy of any of these activities and subsequently the experience of flow. In a quite similar way, MHW is an example of an inherently social, cooperative activity that, although it can be practiced alone, is inherently designed to be played together with others. In the game itself, this is of course much more limited than the corporeal interaction with others in MMA. Yet, playing MHW together with my brother – just as MMA does – provides a lived form of social interaction that unfolds in the embodied activity of playing itself and, in turn, also extends beyond the game and 'back' into ordinary life.

Digital social media, thus, shapes the experience of sports and video games – and the flow therein – in several, similar ways: They afford technological structures that supplement and extend the specific, direct social interactions taking place in-game. Thus, in sports, the experience of practicing and consumption for entertainment grow closer together, i.e., fans of a sport are often also practitioners. In video games, on the other hand, a global, digital discourse and community create a similar, reciprocal relationship between playing, and consuming content about the game. Both domains are thoroughly situated in a digitalized, social environment, thus, connecting the local, subjective sphere of experience with a globally constituted practice and imaginary of and around them (Kayali 2019). Specifically, the very alike entertainment complexes emerging around the institutionalization of sports and video games as entertainment and recreational engagement include a variety of social dimensions.

6.2 Dynamic, Complex and Demanding Environments

Part of the immersiveness and believability of sports and video games are in the real cognitive-motorically challenging demands on the player. This demand for skillful engagement by the player with reality through the game is grounded in the generally complex and dynamically changing environments which unfold inside the rule-prescribed action space while still making for a unique experience every time the game is played (Salen & Zimmerman 2004, p. 340). In all the cases of this work, the games and sports themselves and

the experience of flow were situated in fast-paced environments which continuously force the player not only to continuously act but adapt their ongoing action to the dynamically changing demands from an environment that is semi-predictable at best (Csikszentmihalyi 1975). The overall bodily involvement in this, of course, vastly differs between sports and video games: snowboarding and MMA are sports that – once engaged in – expose players to a considerable physical danger which can only be coped with through a sustained overall athletic engagement of the whole body.

All of the sports and games here, manage to create a fast-changing environment which has to be navigated and continuously adapted to mainly through ongoing, skillful, fine-tuned movement, positioning of the own body in relation to the playing field and other players. The imminent and continuous demand for skilled action in movement – in all of the cases – creates an experience of pressure on mind and body to sustain a performance that is appropriate to the challenge of the game. With the clock announcing the start of the sparring round, once starting the descent down the mountain, entering Malenias arena, or finding and engaging a monster on a hunt, the player is under continuous pressure to sustain an adequate motoric performance from start to finish. This pressure manifests in experience of what I called bodily tension that periodically increases and decreases with the changing environmental demands. This bodily tension, while it is grounded in the continuous demand to act and adapt action, at times intensifies such that it becomes almost impossible to think about anything but the ongoing, real-time execution of movement, which itself is not explicated in an abstract form but unfolds only in and through the ongoing movement itself (Krein & Ilundáin-Agurruza 2017).

The periods of increasing bodily tension, but also intensely focused attention, were the moments in which flow emerged mostly, as they signified a performance right at the upper edge of ability and skill. They were often sustainable only for rather limited periods of time before breaking down (for example, if the pressure gets too intense and demands on motoric performance is too high). Looking at this constellation of interaction between player and technologically mediated, challenging in-game reality (cf. Norman 2016, Gibson 2017), all of the cases constrain the space of action to specific, inefficient but challenging modes of movement, at the same time affording a fluent and skillful performance that is constituted in this mode of movement. Elden Ring and MHW enact this by affording simulated movement through button-input on a gamepad, wherein players – engaging in a fight – have to carefully and intricately time positioning and movement of their player-character through continuous

and complex sequences of button-presses corresponding to movements in the game world. In snowboarding, athletes have to coordinate the interaction of their snowboard through their own bodily engagement, continuously and in response to a dynamically changing environment. Similarly, MMA, in order to be practiced safely, demands the same intricate sense of – and ability to – carefully manage the own bodily capacities, ranges of movement, action, proprioception, coordination and affects emerging in the specific mode of movement prescribed by a particular activity or game (Ihde 2009).

In the activities explored over the course of this work, dynamic, complex and motorically challenging environments are one of the main forces in pulling players into a game. Once the player voluntarily decides to step into the magic circle of the game, the game itself will exert pressure on the player to continuously engage in an embodied way for the game's duration. At the same time, these sports and games also construct new – or reconstruct existing – environments and realities which themselves are under constant, fast-paced dynamic change demanding equally fast-paced action by the player (Maldonato 2019, 200). For example, in risk-sports such as snowboarding and MMA, there is an immediate, real danger which, on the one hand, forces players to focus on their own bodily performance, in order to sustain it. On the other hand, it also provides a motivation in the adrenaline it will often release and bring forth a feeling of rush in coping with this danger. In contrast to this, when it comes to video games, failing has – apart from frustration – less grave consequences for the player's health. Nevertheless, both video games managed to not only immerse the player into its world, but also to provide a similar, albeit less dangerous, feeling of the need to cope in a threatening environment. In MHW, as I feel confident in my own ability, this sense of imminent danger was still very present in the sense that a single mistake can mean failing a quest. Performing under the pressure this danger creates, yet, was much easier than in MHW. Similarly, while I feel able to deal with the danger I experience kickboxing, once I have to engage in wrestling, there are moments in which I do not feel in control of what happens at all.

Thus, the environments in the investigated video games and sports fundamentally differ in the bodily demands they put on players and the consequences arising out of failure to perform in them. Nevertheless, in creating immersive and believable environments, and ranges of action that allow for sufficiently complex and dynamic action sequences, video games are able to create a strikingly similar feeling of the immediate and urgent need to adjust to the dynamically changing environment through their own movement in it (Merleau-Ponty 2002, 126–127). As players engage with these fast-paced games, the environments they find

themselves in simply do not allow the time to entertain any form of abstract reasoning. Instead, they are confronted with an immediate need to act, as long as the game goes on. Thinking and making sense of the surroundings and understanding the world one experiences – in these situations – boils down to only acting and moving in an adequate way and in response to the demands of the present moment.

In order to enable a consistent experience of flow, it is, therefore, mandatory that a game – regardless of being enacted digitally or analog – implements its challenge in a way that corresponds to the players – over time improving – level of skill. All of the here described sports and games were played for a rather long time before being explored in context of this work. Yet, they are probably best categorized as the experiences of a 'casual player', practicing them as a hobby and merely for fun and not competitively. Thus, the flow experiences that emerged probably would not have been possible without the history of engagement with the game that came before these studies. It is, therefore, also a history of prolonged engagement with and exposure to the game environment which has to accompany a thoroughly embodied understanding of the own actions and the prescribed modes of movement, the environment, and the game this constitutes (Cappuccio et al. 2021).

MHW and ER are, in these aspects, very similar to the experience of flow in MMA and snowboarding. Once one accepts that the actions taken in a video game are on several levels physical – they demand the skilled management of spatiotemporal awareness and attention, as well as a fine-tuned hand-eye coordination and a strategically and adaptive cognition. The specific forms of embodiment that emerge in such a coupled system of subject, technology and environment can be experienced as challenging as traditional sports (Reiner 2019, p. 349). The game environments that are created and shown on-screen are, of course bound by the constraints that such a digitized abstraction of a world erects, for example, in the limited space of action that is available in the specific form of interface into the on-screen world (in this case, a monitor and the gamepad) (Taylor 2012). Nevertheless, MHW and ER can be experienced as highly dynamic, fluent and motorically demanding environments that make it easy to forget that one only sits in front of the monitor.

6.3 Control and Direct Feedback

Despite the dynamic and complexity with which they unfold, all of the cases feature a clear set of goals, as well as the ways with which the environment can be engaged with. In MHW, ER, and MMA, the goal is to win a fight, although each activity prescribes different ranges of

possible action and means to do so. In the two video games, this is experienced through an environment shown on a monitor, and through the translation of specific finger-movement-patterns into on-screen action. MMA, on the other hand, features the corporeal engagement in violent, unarmed combat integrating a range of different movement and combat-systems. In snowboarding, the goal is to descend the mountain as fluently, aesthetically and kinaesthetically pleasing as possible. At the same time, all cases feature an intricate range of perceptual cues in the environment, which will invite the player to engage with them in a specific way, i.e., they will situationally afford certain actions while constraining others (Salen & Zimmerman 2003). Rhythm, for example, is such a factor in both video games and sports activities in this work. The optimal performance in fighting engagements in ER, MHW or MMA was strongly dependent on establishing and controlling a rhythm of moving, engaging and disengaging with the respective in-game opponent (i.e., Malenia, one of the many monsters in MHW, or a human sparring partner). In snowboarding, flow depended on the fluent, rhythmic, alternating movement and engagement with the centrifugal and gravitational forces at play. This rhythm constituted in the interactive movement was something in all of the cases that helped sustain a general bodily performance, while freeing attention to focus on small-scale sensorimotor adjustments in response to the dynamic environmental changes taking place. In all of these cases, there was a continuous, reciprocal loop of feedback and action. As they are played, all of the games described demand the continuous and sustained engagement through motor action, whereby there is the added challenge of being able to adjust and fine-tune this motor action corresponding to the feedback of a continuously changing environment (Colombetti 2018, p. 585).

With practice, players will increasingly be able to understand the own interaction between the environment and oneself through the specific movements taking place therein, while this understanding will be less and less dependent on the distinction between agents, isolated aspects, or single entities in this environment. Instead, ‘knowing what to do’ at any given moment in-game will consist of knowing how to move appropriately, according to the environmental conditions, as well as how the environmental conditions change in response to their own movement and action. With enough skill, players will be able to anticipate and adapt to the environment as it unfolds but also to shape this unfolding environment according to their own actions. Thus, the ability to perform appropriately in any of the game environments described here will be fundamentally shaped by the ability to understand one's corporeal self and the environment not as separate entities, but as one single system which is

only understood in the ongoing, bodily interaction with it (Breivik 2014). As the flow state is characterized by skillful, *intentional* performance (Carman 2008, 117), the activity through which it emerges has to be directed at something and in a meaningful way. Games are, as this work introduced in the first chapters, for the most part an autotelic activity, that is, they are not played to another end but for the joy of playing (Sutton-Smith 1997).

Yet, in themselves, they always feature a set of explicitly present goals, rules and means (Suits 1978). As such, they constitute not only the spatiotemporal limits of the game-space, but also a framework that determines the way intentionality can take shape throughout a game. The rules and means, on the other hand, will define the specific forms of movement that are allowed and those forms of movement that enact the most effective form of game-play. MHW, ER, and video games in general – given that they are designed, digital environments – hardcode these rules into the worlds they enact, thus, defining the possible range of action and movement into the structure of the game-world itself (Juul 2005, Fernandez-Vara 20, p. 124-126). MMA and snowboarding uphold their rules in order to constrain and limit the possible range of movement and, thereby, create a challenge for the player. Kayali & Purgathofer (2008, p. 106) neatly summarize this relation writing that '[s]ports have innate rules, and video games can be described as rule sets themselves'.

The sports and video games in this work are designed with the intention to create challenging, yet joyous environments and activities of intentional, skilled movement and interaction. Often the constraints as well as affordances to do so are fundamentally constituted by the specific forms of technological artifacts that make up a game (Ihde 2012). In MHW and ER, for example, corporeal involvement is heavily constrained to only the very small movements and presses of the fingers on the input device and the visual attention to the screen showing the in-game world. Importantly, video games, in order to enable the 'willing suspension of disbelief' (Coleridge, 1817) that is necessary to enter the magic circle, will have to *translate* (Kayali & Purgathofer 2008, p. 106) and *abstract* (Juul 2007) a player's corporeal, bodily action. In MHW and ER, single button-presses on a controller are translated into more complex action taking place on-screen and in game (e.g. the swing of a sword, continuous walking, a jump or a dodge roll). Further, mechanics such as *animation priority*[34] will enforce a specific pace of the player player-character's movement and, hence, a specific pace in the player's corporeal, bodily action (i.e., repeatedly 'mashing' buttons will have no effect,

[34] animation priority means that, once an attack animation starts, any further button-press will not have any effect until the animation ends or the player is hit by another entity

instead, I have to precisely time my button-presses to the length of my player character's attack animations). Video games as rule-systems constitute worlds that can be designed to enable the experience of a complex, dynamically changing environment while enabling an equally complex form of agency and ability to move and act in and to shape them. MHW and ER both manage to move along a thin edge between a hard challenge and the player's ability to exert control over and shape the in-game environment (Rietveld et al. 2018, p. 65). Just as the traditional sports reviewed here, video games also manage to sustain their challenge over time such that it corresponds to the increasing skill level the player acquires over this time (Cappuccio et al. 2021).

In a similar manner, the traditional sports that were explored in this work afford an experience to the practitioner that limits the range of action and movement in a way that would be extremely impractical outside of the sport itself. Instead of designing self-contained, digital worlds in their own right, MMA and snowboarding – in their rule-systems – constitute more of a transformation of ordinary experience and understanding of existing environments. While in MMA this transformation is mediated not only through an abstract system of formal, written rules constraining the range of action (i.e., in the form of 'doing X is not allowed') but also through the integration of technological artifacts that are part of the activity in that they also afford certain actions otherwise hardly possible (i.e., fingerless gloves, allowing to strike the opponent without injuring one's own hands, as well as to grab and hold opponents, due to the missing fingers) (cf. Ihde 2012, p. 179-180). The snowboarding experience, for example, is fundamentally constituted in the specific form of movement that is enabled by the coupling of the human subject, the board, bindings and boots and finally the snowy underground of the slope. While there are no abstract rules that have to be accepted, snowboarding affords only a specific mode of movement while others are constrained to the point of impossibility to enact them. For example, a rider – in order to enact a good run – will always be forced to traverse the mountain in a sideways position, which, in turn, enables the rhythmic alternation of bodily movement and edges of the snowboard in the snow and the instrumentalization of the gravitational and centrifugal forces that affect the rider (Loland 2007, p. 116).

While video games certainly are much more constrained in the possible forms of digitally mediated embodiment they can enable, to an extent they are also much more free in designing environments tailored for specific experiences, including flow (Salen & Zimmerman 2003, p. 262). The sports that are of concern to this work, instead often engage with already very challenging environments. In these environments, experience and the space of action are

mediated through technological mediation and sets of abstract rules (Breivik 2011, p. 24). Both sports and video games are able to exert a similar ‘pull’ on the player, such that they willingly immerse themselves and ‘believe’ in the game’s alternative reality. Thus – in playing – they also become serious about it, especially when it comes to the aspect of standing up to and mastering the challenge of the respective game (Moreau & Tomporowski 2019, p. 268). During the time playing, this feels equally as ‘real’ in the fight against Malenia as standing in a ring and starting a round of sparring, although in playing ER, of course, the worst consequence of losing is hurt ego while in MMA it is physical pain. ER manages to simulate not only a – in a sense mundane – fight, but creates a whole fictional world in which the fight against Malenia is situated, whereby the fight itself is conveyed as one against a godlike being rather than an individual with ‘only’ human capacities.

Whether the space of the game is a designed, only digitally materialized world or situates a transformed, but existing environment, both provide a range of motion and sense-making through movement. In this range of motion and the prescribed capacities for action and movement, players will have at hand a range of affordances and possibilities to exert control, not only over the own agency and movement but also over the environment, as it unfolds in experience and through this agency. In this sense and although the ranges of movement vastly differ between video games such as MHW or ER on the one hand and sports like MMA and snowboarding on the other, the experience of flow is afforded in very similar ways throughout all of these activities. The fighting in ER and MHW – although overall less bodily involving – manage to replicate the feeling of a level of challenging complexity of ‘making sense through action’ (Gallagher 2015, p. 143) that is also experienced in the fighting environment of MMA (cf. Spencer 2012). In the play sessions done for this work, it was incredibly helpful to watch my own recordings retrospectively, not only to analyze them for this work, but also to recognize room for improvement in their own performance. The very same practice is essential in the contemporary schooling of snowboarding, where video recordings are taken in order to analyze specific aspects, or details of movement sequences in order to improve one's own skill in executing them. Generally, the notion of paratext, which comes out of game studies and has not – in this form – applied to the domain of traditional sports, is very fitting to describe the complex of media, not just as a form of entertainment consumed alongside the own practice but as a vast complex of resources available to single out and practice specific movements, actions and strategies (Kayali 2019, p. 128). In turn, and situated in the context

of training the performance in a game, this strongly impacts the capacity and level of ability to perform in it (Rietveld 2008).

6.4 Loss of Ego

Each game prescribes a specific mode of movement and, subsequently, also certain game-specific patterns and sequences of motion onto which attention will more or less easily narrow down. In ER and MHW, these patterns come in the form of short, intense intervals of combat engagement in which the goal is to make strategic and timely input of button-combinations corresponding to actions taking place on-screen. In MMA, there is a similar rhythm of engagement and disengagement but in the form of physical hand-to-hand combat: Opponents will engage in a sequence of attacking, then shortly bring distance between each other again and search for the next opportunity to engage. In snowboarding, the athlete has to traverse the slope down to the bottom in an aesthetically and kinaesthetically fluent manner. The form of movement to do so that is prescribed by the specific technology of the snowboard will also be enacted rhythmically in the form of symmetrical, alternating movement of the whole body. With a challenge that corresponds to the upper bounds of a player's level of skill, attention gravitates from the maintenance of an overall, often rhythmic movement toward the fine-tuning and adaptation of this movement in response to the changing environment. The need to understand the environment through one's own bodily engagement with it and the complexity and difficulty of the cognitive and motoric demands on the player often leave no choice but to have a precisely focused attention on one's own movement.

Sparring in MMA and a fight against Malenia ER are temporally rather short, both taking around 5 minutes. The rhythm emerging in these games is, therefore, rather fast-paced and consists of the continuous change between short phases of close-distance engagement with the opponent alternating by circling each other and finding opportunities for the next engagement. While this lasts only a few minutes, due to the pressure, the experienced sense of time of one round or attempt mostly feels like a small eternity. MHW and snowboarding, however, are temporally and spatially much more drawn out: In MHW, a hunt can span several different areas that a monster may travel between, while in snowboarding, the demand for a smooth riding performance is measured in terms of its length. When playing MHW, flow arises and has to be sustained in the minute-long combat engagements between hunters and monster until the monster – being in control of the fight – disengages and/or changes the

area upon which it has to be found and engaged with again. Contrasting this, in snowboarding, flow arises in the rhythmic alternation of chaining together turns on the slope which itself affords the flow experience with relative ease. In both cases, time (i.e., the duration of either ride or a hunt) seems to shrink down to only a few moments.

A prerequisite to enter flow, to some extent, is an already existing level of ability which, at least, allows the player to be able to navigate the game-environment with relative fluency in the first place. The more experienced a player is in the respective game, the less resources it will demand to enact the general motor sequences that constitute the game and, in turn, the more resources players will have to fine-tune and adjust these sequences dynamically and in the lived action. It is in this attention to the fine-tuning of sustained motor-action in a complex and dynamically changing, challenging environment in which abstract thought and reasoning seem to dissolve, as the focus on movement takes up all of the players' capacities to think and act (Montero & Moran 2019, pp. 211-212). The flow experience is also coined as the personal experience of 'optimal performance' (Csikszentmihalyi 1982). Given the dynamic of the herein explored games, it is mostly impossible to reproduce an instance of play twice, as every fight, hunt, or ride will be a unique spatiotemporally, individually situated human-technology-world constellation that plays out differently each time. Performance in these games will, therefore, always contain emergent properties that cannot be deterministically derived or planned for a priori, i.e., there is an *immediacy of meaning* (Sheets-Johnstone 2010, p.176). Thus, the games' environments demand an ability of the player to creatively improvise and adjust to an environment that is very difficult to anticipate as it unfolds. Flow itself is only a subjective measure, hence the optimal performance it is constituted by cannot be purely universally defined (i.e., in an abstract, idealist sense) as well. Instead, such an optimum is felt only as the situational, dynamic and continuous feedback from the environment during one's own performance in it. As the environments of those games looked at here all have emergent properties and are chaotic to a degree that makes it difficult to predict them deterministically, they also demand an element of improvisation in order to optimally perform in them (Ilundáin-Agurruza et al. 2017, p. 458-459).

In order to make the enactment of such a situationally optimal performance feasible then, players first of all need to gain an embodied understanding of gameplay which can only be gained through the actual playing of the respective game itself (Miyahara et al. 2020). While descriptive, theoretical knowledge of action, as it is for example gained from engagement with a games paratext is important, it is also paramount to know how this action is executed

in practice. In short, one has to *be able to* do it instead of merely knowing theoretical descriptions of biomechanical or game-mechanical principles (Breivik 2014). As this requires a lot of practice in all cases of this work, these games – in their designs and rules – also create a motivating loop of challenge, improvement in ability to play the game, overcoming, succeeding, and feeling rewarded for it. Over time, this creates a cycle in which the experience of flow, ability and challenge mutually contribute to each other's growth and to the motivation to sustain engagement with the game. This motivation can also include external instances – i.e., an item reward upon beating Malenia, or upon finishing a hunt, or winning a competitive event – but it always affords the intrinsically rewarding feeling that characterizes the flow experience: Being in flow feels good in itself and, thus, motivates players to have this experience which, in turn, also motivates to get better and vice versa.

In connection with cluster three, the centering of attention is another dimension along which the experience of flow in sports and video games converges, albeit – again – in a predominantly unidirectional way, i.e., in the form of video games digitally recreating or simulating (Frasca 2003) the structures that also enable flow in sports. For example, both ER and MHW – in their gameplay – feature very subtle audiovisual cues which signal specific movement patterns by the opponent. These are, however, embedded into the fast-paced combat such that it can be highly difficult to adequately and timely react to them. Thus, they can only be meaningfully understood and engaged with in an embodied way, i.e., they have to be made sense of in and through the own action (Krein et al. 2014). The same holds for the practices of MMA and snowboarding, where one has to closely attend to the opponent or the terrain in front of them and adapt to it accordingly, both through one’s own movement. Video games manage to guide this focus of attention by designing an audiovisually immersive atmosphere and digital environment in which players will have to skillfully time and chain together complex sequences of button presses. Fighting an opponent in MMA demands the player to do the same as fighting an opponent digitally, just with a much larger space of possible action and the added danger of injury (which actually helps in narrowing attention) – similarly with snowboarding which also emphasizes an element of danger that forces a close attention to one's own bodily performance. While video games do imply much less immediate health risks and danger for the player, they, nevertheless, manage to create a similar feeling of urgency which – just as snowboarding and MMA do – creates a strong feeling of bodily tension, narrowing attention down closely to one’s own bodily performance, the environment, and their mutual co-constitution (Sánchez-García et al. 2019).

6.5 Findings

The four clusters found provide an initial typology of the flow experience as it emerges in the cases that were considered in this work: ER, MHW, MMA and snowboarding. In order to answer the research questions posed in chapter 1, the following sections will condense the four clusters and engage with them under the light of these questions.

6.5.1 RQ I: Shared Constraints and Affordances for Flow in Sports and Video Games

Sports and video games provide 'ready-made' frameworks consisting of rulesets and technological infrastructure which, when played, allow an alternative experience of reality, or the experience of navigating an alternative reality (i.e., the designed worlds in video games, or the experience of environments while practicing a specific sport). Playing demands a continuous need for a motoric, bodily engagement, while prescribing the space of possible movement and action in such a way that players have to make sense of the dynamically changing, complex game-space in a thoroughly embodied way (Ilundáin-Agurruza et al. 2017, p. 458). Further, all of the sports and games of concern to this work – in their dynamicity – have emergent properties, i.e., none of them will play out the same twice and every engagement with them will be unique.

Making sense of reality through abstract reasoning and planning is, therefore, mostly inadequate in all of these cases. Instead, making sense of and being able to navigate the in-game environments can be successfully done only through a concrete embodied, and continued, bodily interaction with these environments. Intentional action – engaging with the world in a meaningful way – is fundamentally constituted in a subject's direct and immediate *capacity* to act in it at any moment in time (Hutto & Myin 2013, p. 151). While the goals and rules in sports are very clear and unambiguous, the dynamically changing, challenging environment they situate can make the enactment of those goals extremely difficult, such that the proficiency, joy in practicing the activity, and ease of getting into the flow experience depend reciprocally on each other. Another aspect that is continuously and immediately present in experience of these sports and video games is that of clear feedback about one's own performance: Sometimes, this also includes rather abstract visual cues of one's own health and stamina (specifically in video games). More importantly, this feedback manifests in the continuous monitoring of one's own bodily actions and the environment. A good timing or positioning can, therefore, not be planned for in advance, and the adequacy of any action

will make itself known immediately, for example, in the form of being hit in MMA or the video games (Maldonato 2019).

All of the cases share that they fundamentally change the perception and experience of time and space (Elkington 2010), whereby both seem to vanish completely during the activity and can only be accessed retrospectively, as doing so in a state of flow would also disrupt the flow experience. Not only time but also objects and other subjects lose their conventional meaning and distinguishability as experience narrows down to just the ongoing, present moment that is unfolding in one's own movement and the mutually unfolding environmental-perceptual change (Krein et al. 2014). The specific constellation of necessary systems of bodily motion and sense-making that integrates and is extended by technological artifacts (Clark 2008, p. 38) in order to navigate and perform in a specific game environment is constituted quite differently across different sports and video games. Yet, all of them share that they establish – through their environmental constraints and affordances for action and engagement – a rhythm to which the experiential convergence between action and awareness gravitates and which it stabilizes. This rhythm affords a guiding frame in which overall bodily engagement can be enacted without direct attention, freeing the capacities to closely monitor and finely adjust this overall movement in the action (Bruineberg & Rietveld 2014).

6.5.2 RQ II: Enabling the Flow Experience in Sports and Video Games

Video games and risk-sports are enacted through vastly different forms of coupling between subjects, technologies and environments (Thompson 2010, p. 13; Menary 2010), including vastly different degrees of overall, bodily-physiological involvement in the motion and action taking place in the game. Nevertheless, they all manage to create complex, dynamically changing environments that demand equally complex sensorimotor engagement from the player. Following Csikszentmihalyi (1991, p. 195), the design of environments such that they challengingly correspond to a specific system of movement is a direct design for the experience of flow as well. The here explored video games and sports are all designed with an emphasis on a specific form of movement which is both challenging and inherently rewarding. Snowboarding, MMA, ER, and MHW all feature complex environments not only demanding adaptation from the player but themselves also changing according to the player's actions in the game. The form of sense-making and cognition at play in them is fundamentally grounded in the bodily motion that constitutes the unfolding of the game (Sheets-Johnstone 2010). Out of the interaction between the challenging environment and as the general, embodied capacities of players to adequately make sense of and perform in it, the

flow experience emerges at the point at which the sensorimotor capacities of the player to enact and play the game are stretched to their limits, making for the experience of intense pressure, or tension, but not beyond these individual capacities to maintain skillful coping (Hogeeven 2011).

All of the games – despite the highly different constellations of systems through which they are constituted – share their dynamically, even chaotically unfolding environments which have to be made sense of mainly through movement and skillful sensorimotor coordination. Out of the specific, prescribed modes of motion, as well as of the challenging environment, arises a dynamic in which individuals – no matter how skilled they are – will always be challenged but also able to improve their own level of skill. This encompasses the specific extension through the involved technologies and the ability to pick up the environmental cues and affordances for action that emerge through this mediating extension (Ihde 2009; Clarke 2008; Hutto & Sánchez-García 2015). Sports and video games, in general, have the function of not only prescribing specific modes of motion, but, in doing so, they are also specifically designed to enable the experience of flow states (Breivik 2007; Csikszentmihaly 1975; Di Paolo et al. 2010). The rhythm that is featured throughout all of the cases is *intentionally designed* for. A well-designed game will continuously demand an adaptation to it by the player but also allow to be shaped, in turn, by the player's skilled action within it. The experience of the world is thus brought forth in mutual interaction between the subject and its environment (Varela et al. 2016), mediated by technological artifacts (Ihde 2012, Verbeek 2015).

6.5.3 RQ III: Flow Experiences and the Digital Convergence

A challenging environment – be it digital or ‘analog’ – that offers affordances to influence and exert control over it through bodily engagement and which provides direct, unambiguous feedback about this engagement will also make possible a fluent, skillful coping and, subsequently, the experience of flow (Thompson 2010). In both sports and video games, the need to adapt to a continuously changing, dynamic environment in an equally continuous and dynamic way is afforded to the player by narrowing their attention to focus only on their own bodily movement in relation to the changing environment. The intense demand for skilled action by the player thereby also situates the need for a capacity to ‘read the environment’ through this action. While the environment itself forces players to adapt to it, in this adaptation, players will also change the environment. If they do so in a skillful way, this

reciprocal relationship will situate the optimal performance and experience of flow (Ilundáin-Agurruza et al. 2017).

The distribution of educational content (free and paid alike), the exchange of opinions, criticisms and broadcasts of professional competition, and the practice through globally accessible digital media situate landscapes that extend beyond the game itself. These digital environments will not only shape the way an individual experiences the game itself (i.e., by being motivated after watching a good fight, snowboarding movie, or a skillful instance of gameplay), but, in the form of teaching, they also provide affordances to improve oneself. Reciprocally, the individual, bodily practice of either video game or sport – and the embodied knowledge that comes with it – will, in turn, allow a practitioner to consume the digital media around it with a different mindset. For example, it takes a certain level of embodied knowledge in order to actually consume sports and video game content in a critical and reflected way. Watching sports or video games, for example, while also being a practitioner having a certain level of embodied knowledge of the activity, will also impact the level of detail which one is 'able' to see in the movement of a professional in the first place (Rizzolatti & Sinigaglia 2007; Spencer 2012, pp. 43-45). Another aspect when it comes to control over the game environment and the feedback it provides in interaction – closely relating to the points made in section 6.1. – is the engagement with paratext situated in the broader media culture around a game. It is in the capacity of digital technologies to provide continuous, specific forms of feedback and information to the player which, in turn, helps not only in adapting their own performance according to the unfolding experience of the game environment but also makes explicit information that would otherwise be only implicitly available.

When it comes to the affordances and constraints that constitute the dynamically evolving, fast-paced environments, it is rather difficult to explicate a bidirectional approximation in the experience of sports and video games in the experience of flow considering only the experiences that were described in this work. Video games in particular, increasingly show characteristics that take on sports-like dimensions. The 'digitalization' of sport, though, impacts the experience of flow much less directly. Instead, the environments that are encountered in – for example – MMA and snowboarding are inherently dynamic and chaotic in the first place. Thus, while video game and sport environments can both constitute the flow experience through similar dynamics, it is certainly not the case that the experiences made in MMA and snowboarding gain their dynamic aspects through the introduction of digital

technology. This is not to say, however, that specific imaginaries of a future in which the digital becomes more physical as much as the physical becomes more digital (Miah 2017) will not realize this convergence at some point in time. Further, today there are many ways in which digital technologies become integrated into the actual practices of traditional sports, for example, in the form of fitness-trackers and other wearables (Reiner 2019).

6.6 Reflection and Limitations

The above sections discuss the experience of flow in video games and traditional sports. Given that the experiences described before are also those of the author of this work, it is appropriate to situate this work adequately. Therefore, reflecting on and properly situating the implications this subjective perspective can and does hold for broader scientific discourse across disciplines as well as in a sociotechnical and cultural context. As this work is an exploratory study that starts from an interdisciplinary point integrating works from the disciplines of game studies, philosophy, and the cognitive sciences, the insights gained should open up a domain that is yet underrepresented in the cognitive sciences, and they should explicate the value of the concept of 4E cognition to fields like game studies and game design. Another difficulty that generally arises in exploring phenomena such as flow, is that they are a somewhat 'dreamlike' state: It is impossible to determine the onset of the flow experience, and equally difficult to reflect on it while it takes place. Attempting to do so would actually disrupt and end the experience of flow. Flow is only retrospectively accessible and as such, any description of the phenomenon will – to some extent – itself also construct the description of this phenomenon as something very different than the phenomenon itself (Berkovich-Ohana et al. 2020).

While theoretical studies on the convergence of game and sport cultures are abundant, comparisons between subjective experiences (such as flow) in both fields are much more rare. Similarly, in the field of cognitive science, the concept of games and of different forms of digital embodiments is only beginning to gain traction. Yet, while there is no 'ready-at-hand' methodology that would enable the answer of the research questions posed in this work, the different fields that contributed to this work certainly share many of their methodological predispositions, first and foremost the emphasis on subjective, first-person-experience in exploring games and sports. For this reason, flow – in this work – is not only the specific phenomenon of interest but also serves as an anchor point, as it is also a topic of concern to

the involved disciplines respectively. Thus, one of the aims of this work is to let these different methodologies speak to each other in a meaningful way.

Given that the subjective experience is the grounding for these insights, it is also difficult to generalize the experiences – including that of flow – made here. However, in order to phenomenologically investigate the experience of flow from a first person perspective, the specific games chosen had to be one's that are – subjectively – rather sure to elicit the flow performance. The main question was not if these games enable the experience of flow states, but how the experience of flow takes on the same structures in seemingly rather different forms of activity and embodiment and, further, in how far this can speak to a theorized convergence between sports and video games. Still, the inherently subjective perspective makes it difficult to conclude generalizable results that are universally applicable. Much more, this work should be seen as an attempt to show the value of 4E cognition for the study of games, on the one hand, and the value of games as an experimental paradigm for the cognitive sciences on the other. This work identified potential avenues for 4E cognition to study experience in digitally constituted environments and engaged in contemporary questions in game studies and game design from a perspective of 4E cognition. Further research would have to test these initial findings by, either or both, larger number of participants and a broader range of activities (i.e., different sports and/or video game genres).

7 Conclusion, Impact and Outlook

The research questions of this work aimed at the shared characteristics between traditional sports and video games in their capacities to enable the so-called 'flow experience' (Csikszentmihalyi 2005), as well as the increasing proximity between the contemporary experiences of sports and digital media. The analytical goal in this was, first, to explicate the similarities in the experience of flow in video games and traditional sports. Second, it was to explore how these similarities exactly structure the experience of flow and, finally, to point out in which ways these aspects are exemplary for a hypothesized media convergence, as described by Andy Miah (2017). Chapter 2 situated both, sports and video games as structured, institutionalized forms of play that are at their core autotelic activities which can be engaged with to no other end but the enjoyment their enactment itself – playing the game – brings. This argument essentially situates them as frameworks of rules and technological mediation which allow to transform reality as it is experienced ordinarily. In chapter 3, both sports and video games were further explored in light of an increasingly digitally mediated world which are also the grounds for a convergence between video games (which are inherently digitally mediated forms of games) and 'traditional sports' (which increasingly integrate digital technologies into their enactment). Chapter 4 introduced the paradigm of 4E cognition, postulating cognition and experience as fundamentally grounded in the bodily engagement with an environment. With such an understanding, in chapter 5, the experience of flow was phenomenologically analysed through four cases: two video games (ER and MHW) and two traditional sports (MMA and snowboarding). In chapter 6, the findings were organized in a typology containing four interrelated clusters that were found to constitute the flow experience in all of the four game cases. The four clusters were then analyzed respectively concerning the specific structure or essence constituting the experience of flow and in how far this experience contributes to the convergence of sports and video games.

The findings show that taking a view on cognition as enacted through a subject's bodily engagement with the environment it is situated in provides valuable insights on the constituents of the flow experience. Independent of the specific form of embodied action, all of the cases managed to provide a challenging environment. As long as this challenge and the joy in engaging with this challenge that an activity provides is adequate, the experience of flow was much easier to obtain – no matter the activity. However, when it comes to a bidirectional and reciprocal convergence between video games and sports, there are yet many

strong distinctions between both domains such as the danger involved in risk sports which does not translate at all to the experience of video games. Yet, as was also shown, the distinguishability between experiences made in sports and video games becomes increasingly blurry when it comes to the cultural, social and entertainment complexes which – over time – build around sports and video games in very similar ways and, therefore, also situate a convergence between sports and video games in the sphere of popular media and entertainment culture. While they often do not immediately or directly constitute the experience of flow itself, these digital media constellations contribute to several dimension strongly associated with the flow experience: Consuming the sport/video game as entertainment, as motivational, or educational material, access to social groups with a shared identity, as well as expressing and building one's own identity. While this is not present in the experience of flow itself – where the only thing experienced is one's own action in motion –, these aspects certainly are constituting affordances to learn and improve on one's own skills and abilities in the respective sport or video game, as much as they enable an engagement with those games beyond just the playing itself.

Next to the converging complexes of media culture around sports and video games, there is an argument to be made that video games specifically are integrating human-computer-interfaces that are increasingly complex and overall demanding in the corporeality and bodily forms of action they prescribe. The video games serving as cases for this work showed that – even with abstracting interfaces such as keyboards, controllers and monitors – immersion and complexity can be built into the digital environments experienced through their mediation. Considering the increasing integration of bodily involvement in the consumption of digital media (e.g., in form of virtual-reality or augmented-reality games) and the increasing embeddedness of digital technologies into our everyday practices and surroundings (e.g., in form of wearables and fitness-trackers), it is not far off to expect the overall bodily involvement in video games to orientate toward the general, overall bodily demanding modes of movement found in traditional sports (Miah 2017).

Conclusively, this work showed the converging experience of flow between traditional sports and video games in a generally unidirectional way: Both, video games and sports are – to some extent – designed to enable but in a way also to demand the experience of flow from players or practitioners in order to perform adequately in them. Video games in particular rely inherently on the simulation of material, immersive environments through the meditation of digital technology. In the specific kinds of sports investigated in this work, however, the

integration of digital mediation is much less of a conducive factor in the experience of flow itself, although, there certainly is a digitalization that encompasses not only the way sport is consumed as entertainment but also in the ways it is practiced and trained.

This work is an exploratory approach that puts in relation experiences made in contemporary forms of video games and in traditional sports, specifically in the domain of absorbed, skillful engagement and immersion into any of them. Its impact can be explicated in an interdisciplinary way and on at least three dimensions: First, in describing the converging experiences of video games and sports in the media cultures that exist in and around them, this work contributes to contemporary discourses in game and media studies (cf. Jon & Kennedy 2006). Taking an explicitly enactive view on cognition and experience in this contributes to the understanding the constitution and structure of experience in playful, absorbed and skilled engagement, specifically, the role of movement and bodily involvement in thinking and acting in digitally mediated environments. Second, the argument of this work shows some of the potential benefits of instrumentalizing video games in learning and educational contexts, often discussed under the notion of 'serious games': The experience of flow – being exemplary for a joyful, immersed engagement with an environment – emerges as much in video games as it does in traditional sports. As video games can be designed not only for specific forms of experience but also for specific informational content of such experiences, they situate practical environments to engage individuals in learning and improving specific skills (Kayali et al. 2024). In this work, this amounts mostly to a skilled hand-to-eye coordination and to strategic action and thinking in complex and demanding environments.

Exploring the experience of such digitally mediated environments also opens up new ways to research enactive, embodied cognition in action, which is one of the most prevalent domains of interest in the program of 4E cognition (Hutchins 2010; Heft 2013): Much of the research conducted in 4E cognition relies on participants that are experts, e.g., professional athletes (IIlundáin-Agurruza et al. 2019), or expert meditators (Berkovich-Ohana et al. 2020). Integrating the framework of video games as an experimental paradigm in the cognitive sciences might broaden the access to otherwise difficult to access forms of experience such as flow. The program of 4E cognition emphasizes a specific interest in cognition 'in the wild' (Christensen & Sutton 2019, p. 159), i.e., beyond the investigation of isolated 'modules' of cognitive capacities. One of the aims of this work was to envision video games as a practical 'in-between' of controllable conditions and a complex dynamic environment, making for an

excellent domain to research cognition in action. Additionally, such an experimental paradigm might also prove to be valuable in exploring the specific ways in which embodied cognition unfolds in specifically digital environments and what kinds of digital environments can be designed for our corporeal, bodily capacities (Chabris 2017).

This thesis is aiming to further the value of video games for research in cognition, as well as to contribute to research on digital media with a perspective from the program of 4E cognition. Given that there exists no specific methodology that would integrate all the aspects of interest, further research in this domain should construct a methodological framework that can itself be easily reproduced. Further, since the experiences described here are subjective and personal, they should not be taken as universally valid descriptions – other people might experience the activities very differently. It would, therefore, be mandatory to expand the phenomenological approach taken here such that it can integrate and relate the experiences of a broader range of individual perspectives (i.e., conducting further research with more participants) and over a broader range of different games which ultimately should also result in more generalizable propositions.

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