The Role of State Intervention in the Danish Game Industry

An ecosystem analysis

Programme: Management of Creative Business Processes
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Master's Thesis

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Date: 17/05/2021

Word count: 181.158
Page count: 79

Acknowledgements

I want to express my sincere appreciation for anyone who has made this study possible. A special thanks goes out to my love, Mark, for supporting me through a difficult time; to my friends and family for personal comfort. I also want to take the opportunity to thank my supervisor Daniel, for being patient and kind throughout my every question, and to the many professionals who contributed to this experience and project becoming full of real voices.

This study would not have been possible without you.

Abstract

The Danish ecosystem for game developers is taking form; it is a young industry. It is also a global, fast-growing industry, and part of the creative industries, which has enjoyed increased interest from many governments as a new path to economic growth. To encourage a strong entrepreneurial ecosystem for the Danish game industry, it is necessary to simultaneously keep a holistic overview and delve into the individual parts of this system - how they influence each other to ensure a healthy ground for this ecology to grow.

This thesis aims at understanding how policy can support and maintain a healthy entrepreneurial ecosystem for the Danish game developers. In the process, it will be uncovered what makes the game industry an interesting and complicated size to manage, what their biggest challenges are, and how the ongoing centralization of policy processes have had unintended consequences for the industry, which should be addressed. The objective is to gain awareness of the individual elements within the Danish game developer ecosystem by following the sources of finance, the interest organizations, the developers, and by investigating the policies that have influenced the business. This is a qualitative study based on an evaluative case study of the Danish video game industry.

The research of this thesis finds that the current state of the ecosystem is fragmented, and that it is possible to address some of these issues with political maneuvers. The complexity of game development and its products makes it difficult for policymakers and investors to understand the industry, and it is necessary to collaboratively create an overview of the production processes to alleviate this. Furthermore, the different policies which regard the industry have little or no synergy, which is also reflected in the disjunction of funding level options. It is recommended that a task force is established to mend these fissures, and that specialized funding and incubators are set up to ensure that the studios gain the necessary business acumen to become sustainable firms. Lastly, games should be separated from film policy to cement the value of games as unique cultural products.

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1.0 Introduction

1.1 Background

Although the Danish game industry had its tentative beginnings in the 1960's, it wasn't until the turn of the century that Denmark found itself on the world map of games with the publishment of IO Interactive's game "Hitman: Codename 47", which became a hit and later a franchise that would be presented as a success story for the Danish game industry **(Datamuseum, 2020; Kristiansen & Lohdahl, 2019)**. Video games were, by the year 2000, largely seen as a kind of digital toy for children and young people. Much of the discussion revolved around the content, and the effect of computer games **(Egenfeldt-Nielsen & Smith, 2000)**. However, by 2004, games were seen as part of the experience economy, still particularly within the children- and youth sector, but expanding, and were pointed out as having a high-growth potential on a national and international market. In their subsequent SWOT-analysis, Mediesekretariatet and the Danish Film Institute underline the major weaknesses of the industry as being *lack of capital/investors, lack of political interest, increasing development costs, lack of project management competences, lack of industry interest in research and product development, and globalisation of the market* **(Mediesekretariatet & Dansk Filminstitut, 2005, pg. 22)**. Today, games are still considered high-growth potential, but have been categorized as creative industries, an area which is being used as an overall feature to attract international partnerships and investment to Denmark **(Creative Denmark, 2021)**. Although games have been in and out of the political spotlight throughout the last 15 years, and despite some improvement as to their industry conditions, the actors within the game development scene still feel as if most people do not know what they do and what value they may provide, socially, culturally, and economically **(iwatch, 2018)**. It is seen that many of the issues faced by the industry in 2005 are still apparent **(Berlingske, 2018)**.

But what is the nature of games and their production, and what do they encompass which makes them difficult to truly understand - for policymakers as well as the public? Games are complex products categorized under creative industries, which through their technological foundation are changeable and elastic in their output, but their creators are still entrepreneurs and artists, who must explore their own relations to the world around them and decide what kind of firm they want

to be. How can policy further apprehension of this industry, and in the process make sure that political interest in the creative industries does not become generic and possibly have adverse effects on the individual industry? The product and industry in question must be investigated before the ecosystem around it can be understood.

Today, the Danish game industry outpaces export sales of any other creative product produced by the Danish creative industries of film, advertising, TV, and interactive services - a growth of 76% more export than the year before, with DKK 924 mio. in turnover **(Producentforeningen, 2021)**. Globally, the gaming industry is projected to generate a turnover of approximately DKK 996 billion in 2021 **(Newzoo, 2020)**, leaving Denmark as a small player with less than 0,1% of the overall market. However, as can be seen from our Nordic neighbors, Finland, Norway and Sweden, which are all accelerating their game industries through funding, policy and public recognition, games are a source of economic growth and national branding **(Sotamaa et al. 2017)**. There is furthermore no indication that people will stop playing games - on the contrary, games have been integrated into many more aspects of our lives than before: they are being used in all levels of education, as aids to the elderly, as entertainment and escapism, as sports, and as a way to expand our understanding of other people's experiences. This permeation of games into all our society demands a higher level of comprehension about business development within the industry than before. This has been known to be a challenge for Danish firms, as there is a tendency to focus on the projects and vision rather than how to maintain a healthy company, also in the educational programs.

Gaining a greater understanding of the industry and its products as described before can aid in recognizing the roots of what kind of challenges the industry faces as a result of how the industry has professionalized and grown. These can then be traced to the support systems, funding options and education available to the industry, which corresponds to different parts of the ecosystem not functioning properly together **(Isenberg, 2011)**. But if there is no synergy between the parts, the connections between the parts cannot reinforce themselves and the system will not become self-sustainable. From recognizing the industry issues, we can then see the underlying political currents, which has impacted the game industry as well.

Therefore, the political framework for the Danish game developers is the last, but possibly the most important theme to delve into. Denmark, as a welfare society, has a long history of policy regulation of markets and industries **(Duelund, 2001)**, a much-debated strategy which can be seen as both detrimental, but in certain contexts, it might have its benefits. Particularly in the context of new creative industries like game development, the government must rethink its role in this interconnected network of agents and actions and find new ways to stimulate the different parts of the system, while keeping their overview intact.

The above areas of interest can all be traced back to parts of the entrepreneurship ecosystem, which the theory outlines as finance, policy, markets, human capital, support, and culture **(Isenberg, 2011)**, which lies as a foundation for this study. It provides the reader with a holistic image of the industry and how the various elements are affecting each other. When discussing policy as the front and center of this thesis, and as a part of the entrepreneurship ecosystem, it is because this is a toolbox with which other areas of the system can be affected.

In pursuing to know more about the complex nature of the Danish game industry, I have formulated the research question below; the sub-questions are to create a coherent and augmenting structure throughout the paper, which builds upon and affects each other like the ecosystem they are describing.

Research Question & Objectives

RQ: How can state intervention foster a sustainable entrepreneurship ecosystem in the Danish Video Game industry?

- How does the Danish game industry differ from traditional entrepreneurship?
- What are the current challenges to the industry and how can these be alleviated through policy?
- How does the game industry fit into the Danish public policy, and how has the policy processes affected the game industry?

1.2 Delimitation

The point of this paper is not to pinpoint the Danish game industry as deserving special treatment. The industry is young and fast-paced and is interesting to study due to the dichotomies it presents, its multi-layered values and disciplines. It is the purpose of this paper to holistically understand the individual parts of the industry and how they interact, while identifying points of interest where government intervention could alleviate some of the challenges that the industry is facing. Here, it is essential to emphasize that government intervention does not only mean subsidies or centralization, but rather an array of tools that can be wielded in a variety of ways and temporal frameworks. This is not a simple task, and my paper will hopefully not be the last one to delve into the many aspects of this industry. In this paper, I have chosen to focus on what the government can do for the industry, rather than investigating the individual organizations and their methods of operating. While the organizations themselves are the flesh and blood of the industry, and certainly have a demanding task ahead of them, it is important to note that the environment in which they find themselves is just as critical to study, particularly in Denmark, which has a strong history of government involvement in culture and industry.

Structure of paper

Chapter 1 introduced the area of research as well as the research question, setting the scene for the rest of the paper.

Chapter 2 goes into detail about the theoretical framework of the research and helps 'frame' how different aspects of the phenomena are interpreted.

Chapter 3 outlines the Danish gaming industry within the following themes: the industry and its growth, the production of games, and the educational institutes.

Chapter 4 elaborates on the philosophy of science and the methodology for the research project, along with the reasoning behind the chosen methods.

Chapter 5 will serve as a presentation and interpretation of the empirical findings from the data collection, analyzing it in connection with the theoretical framework.

Chapter 6 rounds up the paper and summarizes the research project and the main findings that were discovered.

2.0 Theoretical Framework

The following chapter will give a brief overview of the most important theories used in this paper to frame the empirical data collected. My choice of an abductive, rather than deductive or inductive, approach has certain consequences for the literature review, which will be explained further in the Methods chapter. For now, it is sufficient to say that the literature review will not be delving into all of the theories used in the paper, but rather give an introduction to the overall framework. The details and aspects of the theory will then be examined further when it is used in the analysis together with the empirical data.

2.1 The components of a sustainable ecosystem

The notion of a business *ecosystem* or ecology was first introduced by James F. Moore in 1993, who used the traditionally biological concept to describe the network of organizations and institutions that is involved in the production and dissemination of a product or service **(Moore, 1993)**. It describes the relationships between the parties and the influence they exert throughout their collaboration or competition, and can be used to analyze different aspects, be it weaknesses, gaps in the market or alternative strategies **(Investopedia, 2021)**.

This concept of connectivity and their complementary 'butterfly effect', where every element can influence the other, is useful for the purposes of this thesis, seeing as we are trying to identify the elements of the Danish video game industry ecosystem, and how these may be influenced through state intervention. Through this concept, it is also possible to identify the changes that have already been made and their consequences for the rest of the system, intended or not.

Ten years later, Henry Etzkowitz developed what he called the Triple Helix model, a concept which was also inspired by biology and its intertwined sequences of DNA. This model represents the necessary proximity that he deemed essential for the creation, dissemination, and utilization of knowledge in modern society between the government, universities and the industry **(Etzkowitz,**

2003). Traditional models of the relationships between these three areas are often presented as either *laissez-faire*, in which the three institutions are separate, but utilizes loose connections to achieve limited collaboration, or *etatistic*, in which the state has encompassed the industry and the universities, but thus plays a larger role in determining their output **(ibid.)**.

The three institutions, according to Etzkowitz, represent their own powerhouse: the government is in charge of ensuring contractual relations and the exchange of information, the university is responsible for the generation of knowledge and technology, and the industry is central to production **(Etzkowitz, 2003)**. However, in the emerging Triple Helix model, each of these institutions must expand their existing roles into the other through ongoing discussions with each other about how to amplify the local economy or achieve a regional growth agreement through the use of councils, liaisons and other positions in which knowledge can flow. As the Triple Helix forms, each institution will develop overlapping, shared responsibilities. Hence the universities will take on business and governance functions; the government will be making venture capital available to startups; the industry will take on educational goals in specialized training **(ibid.)**.

As demonstrated above, these organically inspired models of helices and ecosystems are efficiently used as a way to represent the components of a national innovation system and how they are affected by external and internal influences like regional industrial policies, national identity and globalization. In line with this, this paper has used the framework by Isenberg **(2011)**, called the Entrepreneurial Ecosystem, which reflects the elements that are necessary to deliberately create a sustainable ecosystem for entrepreneurs. Six overall elements are presented, each of which has several subcategories: policy, markets, capital, human skills, culture, and support. One of the main issues, as Isenberg states, is the lack of a holistic approach to creating such a system. The current policy decisions have a tendency to focus on one thing at a time, lacking clarity and measurements, and without enough priority given to entrepreneurship **(ibid.)**.

Furthermore, another article by Isenberg **(2014)** also clears up some of the common misconceptions of the connection between entrepreneurship and economic development. Firstly, he argues that while the government often focuses on the number of new startups, this is not only unsubstantiated, but may also be related to negative growth. Another often-heard purpose of

encouraging entrepreneurship is the creation of jobs, but this is not the case either (which is also touched upon later in this section). Instead, the purposes of encouraging an ecosystem like this are as diverse as the stakeholders within the system. Isenberg also argues that financial incentives and incubators are not necessary for the creation of an entrepreneurship ecosystem, but this is something which is not clear cut, and may be dependent on the local conditions. In general, the specific drivers of the ecosystem are not locked down in this sense. Instead, a system needs a balanced presence of it all, and, according to him, without too much state intervention **(Isenberg, 2014)**. This will be discussed, however, as this study tries to unpack what state intervention could actually do for the entrepreneurial ecosystem.

Mason and Brown **(2014)** unpack the entrepreneurial ecosystem further and addresses some of the issues with Isenberg's model: in particular, the characteristics of the ecosystem are quite generic, and there is no explanation of how such an ecosystem begins at all. In their paper, they highlight that there are no one-size-fits-all models for building the entrepreneurship ecosystem, as disparate systems develop under a range of unique circumstances, and that these conditions may be cultivated over varying periods of time. However, some elements can be identified, among other things universities, for creating knowledge and providing talent, entrepreneurial mobility, and government spending, which entails the creation and maintenance of incubators and providing the conditions for the first wave of venture capital needed for accelerating growth. Lastly, they stress the importance of legitimization of industries by role models, and the spin-offs that these role models produce, to start building the entrepreneurial support network. This step is essential to a self-sustained ecosystem, which constantly reinforces itself through knowledge dissemination and growth. Furthermore, one of the main points of the paper is to underline the different kinds of support needed at different stages within the ecosystem. While young entrepreneurs and startups need monetary support in the form of venture capital and easy access to loans, the support given to mature firms should be relational, which includes human capital development, internationalization support and access to growth capital **(Mason & Brown, 2014)**.

While Etzkowitz' model has taken a macro-view of a national system of innovation, it has been criticized for the lack of entrepreneurial involvement, resulting in a poor integration of the three institutions **(Elfving et al., 2008)**. While the systems-approach indeed looks at institutions in

which entrepreneurs operate, the individual is often left out, and the kind of entrepreneurship in focus is often explicitly surrounding technological innovation, while ignoring other kinds of entrepreneurship. Elfving et al. instead suggests a traditional DNA-shaped model, where the elements are as follows: One strand is the entrepreneurial assets, consisting of human and organizational capital, the other strand is innovation assets, which are identified as flows of ideas, and lastly, between the two revolving strands are 'bridging assets', which can best be described as knowledge intermediaries that "coordinate and encourage the interaction of entrepreneurs and ideas and [seek] to proactively connect both with resources" **(Elfving et al., 2008, pg. 271)**.

However, by keeping this in mind, and using the Triple Helix/Double Helix in conjunction with Isenberg's model for this paper, we can expand on some of the subdivisions within the three institutions and gain a deeper understanding of the complex interconnections of these areas, and how they perform during different circumstances **(Isenberg, 2011)**. They both underline the need for a certain holistic perspective of governing, which is necessary for an organic relationship between different parts of the network, and furthermore, they both highlight that there must be an equal effort from top-down and bottom-up to avoid centralization or fragmentation of the system. To achieve this two-fold flow, it is necessary to ensure a continuous collaboration between both small and large agents in the network **(ibid.)**.

Looking at these frameworks, there is an obvious focus on entrepreneurial action and how this can be supported by universities and governments. Entrepreneurship has a long history of being the focus of government policy in the endeavor of creating jobs, economic growth, and innovation going back to the 1970's **(Mazzarol, 2014)**. However, there are several sides of entrepreneurship and its development which are rarely touched upon.

2.2 A critical view of entrepreneurship

This unfettered adoration of the start-up culture, and the identity that comes with it, is not shared by everyone for various reasons. Firstly, entrepreneurship, as promoted today in universities and politics, rarely touches upon the effects on your professional and personal life, and the consequences it may have on your mental health, personal finances, and your relationship with

your environment **(Goli & Ziemiański, 2020)**. This is in line with what Besley and Peters **(2007)** calls the "responsibilization" of the self, in which the move from traditional Keynesian economics to neoliberalism has seen governments step back to shift some risk to the individual. The government is seen as giving the individual a greater amount of freedom, empowering their (citizen-)consumers. Thus, the individual must, to a greater degree, make decisions about all aspects of themselves at pivotal points in their lives, absorbing the risk associated with these choices **(ibid.)**.

This tendency towards a positivity bias in entrepreneurship education can be a result of several shifts. Researchers may unwittingly reinforce the power structures without remaining sceptical and reflective of the different positions **(Alvesson & Skjöldberg, 2010)**, but also, among other things, because of the rise of 'superstar' entrepreneurs like Elon Musk, Mark Zuckerberg or Jeff Bezos, often with accompanying stories of how they started in garages with nothing **(Goli & Ziemiański, 2020; Entrepreneurship Insight, 2020)**. Not much research on these aspects of entrepreneurship has been carried out but, increasingly, researchers are calling for studies into what has been categorized as the Dark Side, the Downside and the Destructive Side of Entrepreneurship in Shepherd's **(2019)** article, referring to the "*..negative psychological and emotional reactions from engaging in entrepreneurial action*", the "*loss of capital (e.g., financial and social) from engaging in the entrepreneurial process*" and the "*negative impacts on society members from damage to resources owned or accessed by others as a result of entrepreneurial action*" **(Sheperd, 2019, pg. 217-218)**.

2.3 The role of government in entrepreneurship

In relation to the theme of government encouragement of entrepreneurship, Shane has argued that the government should not attempt to influence people to become entrepreneurs when they themselves do not have the competences to evaluate which start-ups are high-growth and will generate jobs and enhance economic prosperity **(Shane, 2009)**. The argument made is two-fold: government intervention often results in more firms entering risky industries, which does not lead to increased economic growth, and, contrary to popular belief, these new firms do not initially lead

to job growth; companies must be at least several years old (and successful) to have a serious impact on job creation **(ibid.)**.

This is further underlined by Isenberg **(2011)** and Mason & Brown **(2014)**, who all caution against too much direct government intervention in building a healthy entrepreneurship ecosystem. These authors theorize that grants and subsidies distort entrepreneurial behavior and point out the incompatibility of the pace at which governments and entrepreneurs are working. Both are basing their ideas on Feld's book on start-up communities and how to foster these **(2012)**. In this book, Feld explains that governments work in hierarchies, where roles and responsibilities are clear cut, and often work with a temporal limitation of cycles lasting between two to four years; entrepreneurs work in networks of "broad, loosely affiliated set of leaders and organizations that are working in parallel on a variety of different initiatives" **(Feld, 2012, pg. 82-83)**. Governments are therefore often working shortsightedly and should not be depended upon by entrepreneurs to foster long-term growth.

The impact of direct government support for innovation through grants and subsidies is explained by Gustafsson et al. **(2019)**. These subsidies and grants are called 'soft money' and do not (strictly) need to be paid back in contrast to 'hard money', which includes bank loans, investments, and venture capital, which must be paid back within a set amount of time. Through the study of Swedish entrepreneurs, they found that firms with the highest productivity almost entirely avoided spending time seeking government grants, while the firms seeking and receiving the most grants - "*subsidy entrepreneurs"* **(Gustafsson et al., 2019, pg. 439)** - had the lowest productivity. A series of surprising findings can be presented on these particular companies besides low productivity, namely that they have higher wages and higher skill intensity. This suggests that the difficulty inherent in the application for government subsidies requires a higher skill level than in non-subsidy seeking companies and, furthermore, that the cost of applying for grants decreases with the amount of applications, as the company learns to build a pipeline for the grants and their requirements **(ibid.)**.

2.4 The creative entrepreneur

The classical entrepreneur is a serial entrepreneur, starting her own business (often in a high-tech field), succeeding, exiting it and driven by the elation of achievement, starting new ventures - thus becoming part of a self-sustaining and self-generating entrepreneurship ecosystem **(Isenberg, 2011)**. In both Etzkowitz' Triple Helix model and Isenberg's Entrepreneurship Ecosystem the focus is on a generic entrepreneurship genre. However, this kind of entrepreneurship does not always reflect creative entrepreneurship, wherein person(s) starts a business in the creative industries driven by the desire to promote and develop a somewhat unilateral, creative vision for a longer period of time, *without* exiting and moving on to founding new companies like high-growth entrepreneurs do **(Patten, 2016; Bujor, 2016)**.

Entrepreneurship and creative activities share many of the same characteristics, both revolving around the balance between novelty and familiarity, within the framework of 'usefulness'. The experience of being a creative individual in an entrepreneurial society can be difficult, as the economic interest of external stakeholders can seem in stark contrast to the intimacy of conceiving a creative product. Moreover, creative entrepreneurs often identify first and foremost with their field of work, rather than 'being an entrepreneur'. This also leads to different conceptions of creativity depending on motivations; if you are mostly intrinsically motivated, you have a different perception of the amount of freedom you have in your work than if you're extrinsically motivated **(Patten, 2016; Caves, 2000)**.

2.5 The creative industries and cluster policy

Lastly, it would be remiss not to touch upon the cultural and creative industries (CCI), in which games are categorized, and the policies governing these, as this has been the focal point of an ongoing debate since Adorno and Horkheimer first described the CCI as manufactured culture for the masses, produced by the masses **(UNESCO, 1980)**. Cultural and creative industries have been modelled in various ways and include a wide array of different sectors: Visual arts, performative arts, architecture, film, fashion, advertising, design, games, and literature. The categorization, organization, and the value of core, peripheral, and complementary industries is still being

discussed and expanded upon today. It has furthermore been established that creative activities have their own specific economic properties; among the examples are uncertain demands, diverse skill sets, time sensitivity and uncertainty about whether the product has been fully realized **(Caves, 2000)**.

The CCI has been hailed as the new growth potential in many national economies, and there has been multiple different attempts at developing the CCI in local and national contexts through clustering and the governance of these **(Pratt, 2004)**. Clustering is defined as the conglomeration of different CCI within a city, utilizing social and professional networks and contributing to a city's economic growth, quality of life and spillover effects to other sectors, and public policy plays a considerable role in the success of establishing and maintaining a creative cluster **(Gureshidze, 2016)**. Highlighted as the general points of concern for these industries are: lack of access to financing opportunities due to lack of knowledge, high skill and education requirements, IP right protection, and vulnerability as a result of shortcomings in adaptation and high specialization rates **(ibid.)**. Despite the research applied to the area, clusters are still difficult to understand and promote. Pratt **(2004)**, with his definition of creative clusters as a subset of business clusters, argues that by using the same policies as for other industries, and grouping various industries together, policymakers are ignoring the specific characteristics and needs of the individual creative industry, thus obscuring the effective measurement of success of these policies.

In a later article, Pratt **(2005)** expands on this shortcoming by discussing the various policy models for the CCI, and the exploration of possible new spaces for cultural governance. Firstly, he presents three different levels of governance, based on Jessop's interpretation of the notion of governance **(1998, as cited in Pratt, 2005)**: *hierarchy*, based on centralized government intervention; *heterarchy*, a complex, adaptive method of governing, based on self-organization and a focus on open, democratic decision-making; and *market*, a non-structural anarchy, in which the production of goods and services is influenced by the demand.

Secondly, Pratt **(2005)** presents the three discourses within which cultural policy is created. Within the *economic discourse*, there are four non-mutually exclusive versions, which include evaluating cultural commodities' direct and indirect economic impact, justifying policy on voter preference,

viewing cultural goods as public goods, and finally cultural goods as merit goods and justifying policy in creating and upholding markets. Within the *ideological/political discourse*, three versions exist. The humanist position argues that culture is civilizing and uplifting, the aesthetic position argues that cultural production brings us closer to the perfect state, and the cultural particularism position underlines the connection between identity and art, in which a nation can express and underline its own particular identity through the production of cultural goods. Finally, within *social discourse*, cultural production is placed as an extension of welfare policies, in effect shifting the focus from economics, and Pratt suggests that policy should be built upon different concepts and that more attention should be brought to hybrid public-private partnership forms **(Pratt, 2005)**.

Pratt **(2005)** then uses these discourses and levels to build a matrix in which it is possible to explore the space in between the forces of the state and the market, a heterarchy in which policymakers have a much more nuanced understanding of the processes and organizations within the CCI, and where policy would be developed across departments and levels of government, with a focus on recognizing the shortcomings of the two other forms of governance and what can be enhanced.

3.0 Presentation of the Game industry in Denmark

This section will provide a brief overview of different aspects of the game industry, including industry and growth, production, and education.

3.1 The industry and its growth

The Danish video game industry has been tracked since 2009, where Producentforeningen started collecting information on all Danish content producers, including film, TV, advertising, games, and interactive media. The earliest numbers must be considered critically, as the industry codes from Dansk Statistik, which the numbers are based upon, were known to be very broad, and thus included other firms than game developers **(Producentforeningen, 2009)**. Furthermore, data collection methods have radically changed throughout the years **(Producentforeningen, 2021)**.

Keeping this in mind, it is possible to create an approximate overview of the growth of the industry from 2009 to 2018, which can be seen in Appendix 1.

Overall, the industry has experienced a steady growth, with a few drops in the various categories. The industry was peaking in turnover and export around 2014-2015, whereafter it dropped, and has now reached the highest levels of export and turnover in 2019. The industry, in 2019, had exported for almost as much as film, TV, advertising and interactive together **(Producentforeningen, 2021)**. It is also interesting to note that in 2009, the biggest companies with 50+ employees were responsible for 60% of the total employees, 56% of the turnover, and 80% of the total export **(Producentforeningen, 2009)**. In 2018, the top 10% most profitable companies were responsible for 98,6% of the total turnover **(Producentforeningen, 2018)**. The Danish game industry thus presents itself as somewhat distorted, where the incumbents are getting bigger, and the majority of the smaller companies are not so profitable. It is seen, however, that the growth segment[1] in 2018 was in economic prosperity with an increase of 29% in turnover **(ibid.)**.

3.2 The production of games

The production of games is a complex process, demanding the coordination of a variety of disciplines. Generally, dependent on the type of game created, a team needs one or more of the following, unless this is outsourced or one person can cover more than one discipline: graphics designer (UI/2D/3D/VFX/animation), programmer (gameplay/sound/AI), game designer (gameplay/level/concept), sound engineer/composer, quality assurance (QA/playtesting), producer (business development /marketing/scheduling), narrative designer **(Codeguru, 2001)**.

3.3 Education

Several universities offer game design or game related education. Pure game design education is offered as a Masters at the IT University and the Royal Danish Academy, both in Copenhagen.

[1] The growth segment is defined as everything between the bottom and top 10% percentile.

Cross-disciplinary education, which can also lead to the production of computer games, include Medialogy and Interactive Digital Media at Aalborg University. Furthermore, these universities also offer education in Design, Programming, Information Science and a variety of other programs that make up elements within game development. University education within art and animation can be achieved at Viborg Animation School and Truemax Academy.

4.0 Methodology

In the following sections, I will be presenting how my research has been designed. The structure of the presentation will follow the outline of the *research onion*, developed by Saunders et al. **(2019)**, while delving deeper into topics like data collection and analysis, quality of the research and the reflexive foundation for the methodological choices. It should be noted that the structure of the research onion by Saunders et al. gives a very rigid notion of what social research can achieve. Based on Alvesson and Skjöldberg **(2010)**, this chapter will therefore lay the foundation for a new format for the relationship between knowledge production, its processes, and the producer, and how the researcher can take a more holistic approach to theory development.

During the time of writing of this thesis, worldwide pandemic COVID-19 is still going on, which not alone limits the possibilities for qualitative research in my case, but all over the world **(LSE Blog, 2020)**. This will be discussed further in the individual sections.

4.1 Methodological choices

4.1.1 Philosophy

To aid in identifying and confirming my own research philosophy, referring to the assumptions that a researcher makes in the development of new knowledge, and what constitutes valid knowledge **(Saunders et al., 2019)**, I started my work with the reflexive tool, HARP (Heightening your Awareness of your Research Philosophy) from Saunders et al. **(2019, p. 161)**. It consists of a series of questions to which you can agree or disagree at different degrees, each of which has a corresponding point system. When tallied, it is possible to identify which philosophies the user

feels strongest about. In my case, it was clear that the philosophies that I resonated the strongest with was interpretivism, but with a similar connection to postmodernism and pragmatism.

This thesis is an investigation of how political intervention can support the ecosystem of Danish game developers and is thus presenting the multiplicity of realities and voices within political, financial and organizational institutions. It would be easy to simply follow this notion and delve into one of the many different modes of social construction, using grounded theory for data analysis and fit neatly into a long line of traditional social research. However, the many different approaches to research all have their own individual setbacks; to make up for the rigidity and various weaknesses, I will be adapting a reflexive methodology for this study **(Alvesson & Skjöldberg, 2010)**. Firstly, it might be prudent to gain an overview of the approaches that we so brazenly want to cut across.

4.1.2 Approach

One of the most widely used research philosophies in natural sciences is *positivism* ('posited', e.g., 'given'), in which the researchers deductively strive to gather and systematize pre-existing data, the summarization of which is used to build theories. Data, used to uncover the one true reality, should be observable and measurable, and casual relationships can be built on these by a neutral and detached researcher **(Saunders et al. 2019)**. The most common criticism to positivism has been that the purpose of science no longer is "the statistical putting together of surface phenomena in an observed reality" **(Alvesson & Skjöldberg, 2010, p.18)**. Positivism mainly uses quantitative data collection methods, and is often not appropriate for social sciences, where people and their continuously changing realities are in focus.

Positivistic approaches often call for the use of a specific way of developing theory, namely *deduction*. According to Blaikie **(2010, as referred to in Saunders, 2019)**, there are six linear steps to this method. Initially, it is necessary to have a testable hypothesis, in which the researcher attempts to establish a relationship between two or more variables. Then it is necessary to search for conditions or theory in which this hypothesis is expected to hold. It is also essential to establish the premises and make sure that this test is not already existing, and that it will further the existing knowledge of the phenomena. The researcher should then collect the data necessary to test the

hypothesis and analyze them (systematizing and summarizing). If the data is not consistent with the premises, then the hypothesis fails. If the data is consistent, then the hypothesis is corroborated.

Positivism's counterpart, interpretivism, seems to be opposite in all aspects, and is a much more complex affair. The philosophy is firstly an umbrella term for a myriad of different approaches, among others social constructionism, but most of these are difficult to differentiate from each other in the literature and are often used interchangeably. Interpretivism is often conducted inductively and based on the belief that reality is continually constructed through language and culture, not only by the subjects that are studied, but also the researchers that undertake these **(Saunders et al. 2019)**. Data collected is rich and complex, and based in narratives and the interpretations of these. While some approaches within interpretivism are satisfied with presenting these stories and contributing to an expansion of the world view, others, like social constructionism or critical theory, also aim to present possibilities for radical change **(Alvesson & Skjöldberg, 2010)**.

These are the extremes of natural science and social science. In between lies a myriad of combinations of various approaches, some of which leans towards a positivist outlook, and some towards an interpretivist. While I have included critical theory and social constructivism under the umbrella term of interpretivism, it is important to note that these particular approaches have a different set of characteristics than others in the social sciences. To further the overlapping and slightly confusing mapping of social sciences, hermeneutics and postmodernism has also been related to social constructionism, and postmodernism to interpretivism in general by way of saying that interpretivism is a postmodern research philosophy **(Howe, 1998)**. However, instead of discussing how the different branches of social science are connected, I will be focusing on Alvesson & Skjöldberg's framework for how to attain a reflexive methodology **(2010)**, which combines elements from Grounded Theory, Hermeneutics, Critical Theory and Postmodernism.

4.2 The reflexive framework and its components

Grounded Theory (GT), simply explained, has a focus on the discovery, rather than verification, of theory. Through intense reading and coding of collected data through several phases, it is assumed that the data will reveal the main themes of the theory for the researcher, who can then

formulate it and determine the applicability of the theory, rather than testing or verifying it. GT underlines that the researcher must be open to the many sources of data (including diaries, photos, advertisements and more). While general knowledge of the chosen subject matter is desired, it is essential that the researcher refrains from extensive reading before the collection of the data, as to avoid contamination by concepts in their compilation of information. The main criticisms to grounded theory are the strenuous process of coding, which may in the end, without the proper academic background knowledge and reflection, only provide common-sense results **(ibid.)**.

The aspects of Grounded Theory which are interesting to include in the framework of reflexive methodology are *their focus on qualitative research and their openness to the rich narratives and data that exists.*

Hermeneutics aims all of the attention on the interpretation of a text, and understanding the true, hidden meaning of the text. Intuitive, as opposed to discursive, awareness is central to this approach. In Alvesson & Skjöldberg **(2010, p. 134)**, they present a multi-circular model to illustrate the multitude of approaches within hermeneutics: the inner circle is the fundamental level, in which a part of the text must be understood in context of the whole work, and the researcher must have a pre-understanding of the whole text before diving into one specific part. The second circle connotes the alternation between the text, the sub-interpretation, dialogue and pattern of interpretation. Lastly, the outermost circle indicates the choices of themes that can be used singularly or in combination with each other for a deeper understanding of the text, including poetics, empathic approaches, and the hermeneutics of suspicion, to mention a few. Criticism of hermeneutics include their presupposition of unambiguous meaning, which prevents a willingness to open up for dissonance, vagueness and fragmentation, which can be seen as the departure point of postmodernism described below.

The aspect of Hermeneutics interesting in the framework of reflexive methodology is *its intuitive approach to knowledge creation and towards the interpretation of text*.

Critical Theory (CT) is a theoretically focused approach, which hones in on understanding the societal conditions on which theory is based, and how the ideological and political undercurrents

of such can be disputed and undergo radical change. The driving force behind this approach is to identify a problem, avoiding the reinforcement and reproduction of established social institutions through questioning the research, and determining alternative perspectives on the theory in question. The essence of Critical Theory therefore also does not include much empirical material, as it is difficult to collect data within the totality-subjectivity combination they require, and furthermore, the data may be influenced by the subject's subconscious pressures of politics, ideology and social conditions. The main criticism of CT is its overly intellectualising theoretical stance, and its self-interest-driven focus on negative features of society **(Alvesson & Skjöldberg, 2010)**.

The aspect of CT that is used as part of a reflexive methodology is *the reflection on the power asymmetries, ideologies, politics and unconscious processes that are present in both theory, the researcher and the empirical material.*

Postmodernism (PM) focuses on the deconstruction of language as to arrive at the core weakness of its otherwise accepted integrity. This weakness is then forced into domination, at which point the previous unity is undermined, and a new notion of consensus is formed. At the same time, it is necessary for the researchers to radically involve themselves and their attitudes towards the study and its elements and problematize them as their understanding of a subject deepens. In Postmodern research, there is no 'ultimate' or 'best' interpretation, but rather a continuous dialogue between the researcher, their study, their subject and the conditions in which they create new theories. This results in an interpretation in which many voices can be heard and understood in various environments. Criticism of Postmodernism is multifold, but the main argument against PM is that the research operates in closed systems and reveals a lack of dialectics. Postmodern researchers always stay in the marginal or the peripheral - never creating a truth of its own. Furthermore, PM often suffers from textual reductionism, in which anything can be interpreted from the subtext, if you look closely enough **(ibid.)**.

The aspects of Postmodernism which are interesting to include in the framework of reflexive methodology are *their focus on polymorphous pluralism, in which many different voices are heard*

through the otherwise restricted formats of other research approaches, and the critical eyes it has on the creation of knowledge.

It is important to note that reflexive methodology requires the ability to continuously move back and forth between these levels of interpretation. This means that the researcher must constantly consider their own role, the power relations, openness to the narratives told, their intuitive interpretation, and the many other aspects of research including the conditions of the research. While this is not an easy task, it is in itself a process of learning and reflecting.

4.2.1 Reasoning

In line with the above notion of continuously moving back and forth between levels of interpretation, it is worth noting that Haig **(1995, as referenced in Alevesson & Skjöldberg, 2010)** underlines that the reasoning for GT should be *abductive*. This comes from the criticism faced by GT, in which it is described as leaning too much on "naïve empiricism", where the researcher is encouraged to have a theoretical absence at the beginning of the study and a focus on intense study of the empirical data, which can lead to a conclusion which is nothing but common sense (**Alevesson & Skjöldberg, 2010, pg. 75)**. The opposite problem of leaning too much on theory and almost ignoring empirical data as seen in Critical Theory and Postmodernism **(ibid.)**, can lead to results which are difficult to apply in any meaningful way to any lived life. Abductive reasoning may in these cases lend a hand to ensure that the empirical material and the theory are integrated better.

Abduction, which is usually seen as the middle ground between induction and deduction **(Saunders et al., 2019)**, has therefore been utilized in this paper as the natural choice for reflexive methodology, seeing as this is the best choice to ensure balance between the two kinds of reasoning. The inductive or deductive approaches to research are ideal states, and seeing as I am using empirical material, in the form of interviews and secondary literature, for a time-limited thesis, it is necessary for me to switch between the states; my work must start out somewhat deductively in the sense that I need to know what I want to find out, but in line with the qualitative nature of my study, I must also make space for the many voices of the project to speak, while in

the end returning to the existing literature to put my findings in perspective and generating advice and new practice.

4.3 Gathering Insights

This paper, as written during a global pandemic, must necessarily discuss the impact of the crisis on the choice of data collection methods. Under normal circumstances, optimal validation of the quality of the research would be achieved through triangulation, using a multi-method qualitative study **(Saunders et al., 2019)**. Had the pandemic not been happening, this would involve shadowing and observation, group interviews and individual interviews. However, due to the health risks of close contact with other people, and with organizations and institutions having moved online, this was not a possibility anymore **(LSE Blog, 2020)**. While it may have been possible to achieve some triangulation through joining online meetings, my request for such an opportunity was rejected by most with the organizational pretext of the uncertainty or stress it may cause the other participants. This choice was respected in the face of the mental health challenges that a year of lockdown may place on any company and individual. However, this gave me the opportunity to delve into my subject in one-on-one interviews, where I would be able to create a safe framework for people in an online setting, the design of which I will clarify below.

4.3.1 Interviews

There is an abundance of views on interviews. Steinar Kvale, an authority on qualitative research, described 'inter-views' as the very literal exchange of knowledge between people, which has been extensively used in a range of practices, from therapeutic to academic **(Kvale, 2007)**. However, when faced with the question of how to actually examine interviews and what they produce, Czarniawska aptly states to look at interviews "as a site of production and distribution of narratives, an opportunity to sample the dominant discourse via impression management" **(2014, pg. 34)**, seeing as the data collected in interviews cannot be relied on for facts.

The design of the interview has a considerable effect on the answers given, and the answers given are not only subjective, but also under the influence of memory, language, authority of the interviewer and a multitude of other forces. Consequently, the interpretation of the data collected

can be focused on various aspects depending on the kind of subject researched **(Alvesson & Skjöldberg, 2010)**.

Therefore, this study has been planned in line with a reflexive methodology, which identifies the strengths of the main philosophies to become more critical and reflected when conducting, coding and interpreting interviews. I aimed to design the interviews as intensive and semi-constructed for the purpose of staying open to the possibility of veering somewhat off course and letting the conversation guide itself towards the most interesting themes **(Saunders et al., 2019)**, while also being aware of my own biases, assumptions, and tendencies within primary interpretation **(Alvesson & Skjöldberg, 2010)**. Furthermore, I modified the interview guide slightly for every subject, based on my perception of their role and expertise, and on the accumulating knowledge that I acquired throughout the interviews. This was also to accommodate for the fact that many of the interviewees selected for this study was what Kvale calls *elite* interviewees; many of them were experts in their own fields, having worked for many years in different positions, which also resulted in the risk of them having "talking tracks", or planned responses **(Kvale, 2007)**, which I felt should be challenged, in line with being both open and critical of possibly re-produced discourses and the politics behind **(Alvesson & Skjöldberg, 2010)**. This is not to say that it was entirely successful, but in the context of power-relations, an interview between a student and someone of knowledge within an industry is not expected to always be a straightforward process. When expressing an interest in interviewing someone about a complex subject, interviews can become an arena in which politics and education play out in unmanageable ways for the interviewer or the interviewee **(Kvale, 2006)**.

Appendix 2 is a presentation of the interviews that has been made in the collection of data for this thesis, in relation to the Entrepreneurship Ecosystem and the reason why these agents have been chosen.

Public institutions:

Spilordningen, Danish Film Institute. Interviewee: Simon Løvind, *Commissioning Editor, Games and Digital Media*. This interview will be referenced as **SO interview, 2021**. The Danish Film Institute started in 1972 and was established with the responsibility of

encouraging Danish cinema production. In the spring of 2008, Spilordningen was established as part of New Danish Screen **(Computerspil, 2009)**. It is an institution under the Ministry of Cultural Affairs. Spilordningen is the only earmarked cultural subsidy to the game industry as part of Filmaftalen, which is revised every four years.

CAPNOVA, one of four now-defunct public innovation environments. Interviewee: Allan Rasmussen, *Investment Manager*. This interview will be referenced as **CAP interview, 2021**. CAPNOVA became one of the most important sources of early-stage investments throughout its existence. Almost by coincidence, Allan Rasmussen became a one-man department responsible for investment in game start-ups, and an example of how public growth funds could be applied to foster successful game studios.

Vækstfonden. A Danish funding institution. Interviewee: Asbjørn Emil Holmlund, *Investment Associate*. This interview will be referenced as **VF interview, 2021**. The Danish Growth Fund was founded in 1992 and although a complex organisation with many aspects to it, they are mainly working with two tracks of financing: loans and portfolio investment together with business angels, banks, credit funds and more, After the closure of CAPNOVA, it was expected that Vækstfonden would be an alternate source of seed money for game developers. Asbjørn Emil Holmlund is one of a few people within the organisation with an interest in and understanding of the Danish Game industry.

Private Foundations:

Nordisk Games. A division of the Egmont Foundation. Interviewee: Sofie Filt Læntver, *Director of Partnerships*. This interview will be referenced as **NG interview, 2021**. Nordisk Games, a Nordisk Film investment unit established in 2017, currently has investments in seven established game studios in the Nordics and Europe. As they are not a venture capital fund, they strive to create long-term collaborations that offer strategic guidance, smart growth

capital and operational support.

Scandinavian initiatives:

Nordic Game Program. Funded by the Nordic Council of Ministers. Interviewee: Jacob Riis, *Communications and Program Director* for the Nordic Game Conference. This interview will be referenced as **NGP interview, 2021**. The Nordic Game Program was established in 2006 by the Nordic Council of Ministers as a joint Nordic talent development program **(Computerworld, 2011)**. The program was concluded in 2015, but the conference around it still exists.

Game Hub Denmark, part of Game Hub Scandinavia. Allan Abildgaard Kirkeby, *Business Developer*. This interview will be referenced as **GHD interview, 2021**. Game Hub Denmark is a game-focused incubator environment in Grenaa, with offices also in Aalborg and Viborg, which receive interested students from the game-related educations in those areas. They have several international partners in Asia and Europe, and support incoming entrepreneurs with business development, office spaces, network, events, and workshops.

Incubator:

Ideas Lab. Part of Filmby Aarhus, focused on digital experiences (film, animation, games and XR). Interviewee: Christian Nyhus Andersen, *Head of Incubator*. This interview will be referenced as **IL interview, 2021**. Ideas Lab is an incubation environment in Aarhus aiming their attention at creating connections between the different digital content producers, and supporting entrepreneurs through consulting, office spaces, business development and network.

Industry Associations:

Vision Denmark. Innovation & Business Alliance for film, animation, mixed reality (XR) and games. Interviewee: Jan Neiiendam, *Managing Director*. This interview will be referenced as **VD interview, 2021**. Vision Denmark was officially recognized as an industry alliance in 2020, and is representing creative sectors such as animation, film, TV, games, XR and more. It absorbed the previous interest organisation, Interactive Denmark (est. 2013) which was a continuation of Computerspilzonen (est. 2009). Vision Denmark works with the Danish authorities when negotiating framework conditions for the industries, but also offers network, individual advice and access to financing.

Game Developers

Bedtime Digital Games. Interviewee: Klaus Pedersen, *Founder*. This interview will be referenced as **BDG interview, 2021**. Klaus Pedersen started Bedtime Digital in 2011 with four other people, based on their first game, Back to Bed. Today, there are 17 people in the company, growing steadily with three people each year; three games have been published and a fourth is in the pipeline. Bedtime Digital has received various types of funding from DFI, Vækstfonden, CAPNOVA, Creative Europe, Nordisk Game Fund and Nordisk Lånefond.

Northplay. Interviewee: Michael Flarup, *Founder*. This interview will be referenced as **NP interview, 2021**. Northplay was established in 2016 by Michael Flarup, who had managed a successful design agency for several years before. Michael, two former colleagues and a 3D artist published a highly profitable first game the same year and has since then published eight other games. Today, there are nine people at the studio. They have mainly funded themselves through work-for-hire in apps, web, and design, though they also received some funding through DFI.

Triple Topping Games. Interviewee: Astrid Refstrup, *Co-founder*. This interview will be referenced as **TTG interview, 2021**. Triple Topping Games was founded in 2016 by three co-founders. Today, they are 8 people, and have published three games, including one by third-party publishing, and are working on a fourth game. The studio has received various types of funding from an angel investor, DFI, a game investment fund, and a publisher.

As with most qualitative sampling, it is difficult to establish a definite size of the sample needed for a study, as the boundaries of a phenomenon are not known at the research proposal stage. However, to ensure the reflexivity of the project, the research was sampled to reflect the many contrasting opinions of the industry and its agents. This way, it is possible to increase the generalizability of the study **(Chamaz & Bryant, 2019)**. Despite managing to secure interviews with a wide range of institutions and firms, this study is limited in the sense that I did not accomplish collecting data from interviews with either policymakers or newly started entrepreneurs. Of particular interest for me were firms which had further experience with the currently existing incubators in Denmark, and those policymakers who had an interest in the game

industry. Two of the interviewees did, however, have experience with a previous accelerator-program, which does grant my study additional validity in the presented arguments.

4.3.2 Secondary data

The secondary data is based on previously produced literature, mainly official governmental reports. These include previous investigations of the direct and indirect economic effect of the industries within the experience economy; the creative cluster growth and policy; and the game industry. The reports contain both quantitative and qualitative data on the growth of the Danish game industry, its challenges, and developments since the first interest was cast on the sector. Seeing as this data comes from official governmental sources, it is assumed that the people behind the reports have taken the necessary precautions in choosing their methodology.

4.4 Data Analysis

4.4.1 Transcription and coding

Transcription is not without its problems, in the sense that it is difficult to ascertain to which degree the details of the interview should be captured, and whether these details have any significance to the overall analysis. Furthermore, in the process of transcription, emotions, gestures, and atmosphere also gets lost. It is not possible to read body language, tone of voice, hesitations, or eye contact - the transcription is a faded version of the lived conversation **(Czarniawska, 2014; Gubrium et al., 2012)**. As I consider my active role in transcribing the audio recorded during the interview, I can identify a weakness in my interview method. It might have been more encompassing to also have had video recordings of the conversations to capture the physical setting. This, however, comes with a whole new set of methodological challenges, in particular that of observational bias, in which the interviewee, or research subject, behaves differently than they would if they were not recorded **(Gubrium et al., 2012)**.

The first round of coding, which was the initial, also called open, coding, resulted in 217 individual codes. Initial coding is the first step in breaking down the qualitative data into codes, with which it is possible to compare and examine the data across what is in my case interviews. In this first stage, it is important to keep an open mind as to where the data leads you, and in particular noticing

the possible subtexts **(Saldaña, 2013)**. In line with the reflexive methodology, it was necessary to always keep the theory in mind, so as to not stray into details which later would prove irrelevant for the study, thus averting the common pitfalls of GT, as previously explained.

Consistent with this, the axial coding, which is second cycle coding finding emerging patterns in the first cycle, was accompanied with the consideration that the Danish state already conducted a SWOT analysis of the game industry in 2005, and identified a list of themes, with which it is possible to compare the categories of codes emerging from the interviews. However, the secondary literature found to be relevant to this study is also useful to highlight the patterns in the interview which has been less focused by the local research.

A sample of the coding process used in this thesis can be found in Appendix 3.

4.4.2 Ethics

This section is mainly based on a chapter in Kvale's book, "Doing Interviews" **(2007)**, in which he writes on ethical issues in interviewing and research. These kinds of issues should be considered throughout the project, from beginning to the end. Firstly, it is necessary to contemplate the consequences of one's research on the people and organizations it focuses on, both in terms of who it benefits, but also what the research may exclude - who is being silenced or overheard. This could also include legal, political, and social consequences of what a researcher chooses to publish or not, and in which context the interview is being inserted in. Other considerations include the levels of consent given; whether the interviewee wishes to be anonymized, and how this is done within the study; levels of access to the published study for the public; and the role of the researcher **(ibid.)**.

I have taken the following measures to ensure an ethical state of this paper:

1. Provided the interviewee with the interview guide to allow for preparation of answers and supplementary questions regarding my study.
2. Acquired their written and verbal consent to the recording of the interview, and the use of the data in my thesis. An example of the consent form can be seen in Appendix 4.

3. Guaranteed to send a version of my analysis to each participating interviewee, as to allow for follow-up comments on context or clearing up any misunderstandings.

5.0 Analysis and Interpretation

In this section of the thesis, I will be combining a presentation of my empirical findings with my theoretically informed interpretation of them, as to keep in line with the reflexive, abductive methodology explained earlier in the methodology under Section 4.0. This chapter will be organized to mirror the levels of the industry at which the government can operate and influence the industry and will be attended to with considerations to the two overarching models that has been described in Section 2.0 on theory, namely Etzkowitz's Triple Helix model **(2003)** and Isenberg's Entrepreneurship Ecosystem **(2014)**, while also keeping in mind the criticisms of these and their complementary theories. This approach fits well with the overarching themes which have been identified through the coding of the empirical data and in secondary literature like government reports and policies.

The first theme encompasses the complexity of video games as a product and as an industry. This part will be outlining, among other things, the dichotomies of art and commerce, as well as the people within the industry as being creative entrepreneurs and hence separated from traditional processes of entrepreneurship. This first theme thus gives an overview of the products and the people within the industry. The second theme revolves around the characteristics of the industry, its maturity, challenges, and the consequences thereof, based, to some degree, on the nature of the complexity described in the first theme. Lastly, the third theme, building on the first two, dives into the Danish public policy system and its development, with a focus on the game industry and the creative industries in general. This part will also examine the mutual lack of interest that has been apparent; from the game industry itself and from the government.

5.1 A complex offering by a complex industry

Before we can understand the Danish game development ecosystem and its separate areas, it is necessary to analyze the product itself and the people in the industry. Without this, we will not be able to add the necessary context to the ecosystem elements and why it is difficult for the Danish industry to become self-sustaining.

".. the game industry is insanely complex because these products can be anything. There's no blueprints for it. It's a completely multi-facetted thing, game design.. And on top of this weird crystal, which you can look at in all these different ways, then you have the business part, always changing with trends and all, it's super difficult to nail down. And then you have all these people.. There's a lot more different types of people in games than in other industries.."
- Michael Flarup, Northplay (Interview, 2021, 52:57)

5.1.1 Games and their features

In this subsection, we will examine what makes games so special as a cultural and technological product, as opposed to other similar products. This is an important piece of the puzzle in terms of understanding why the Danish industry may have their difficulties in creating the appropriate political interest in their work.

Computer games are a multifaceted product in several different aspects. Looking at the variation of the individual parts of a game - game mechanics, visual style, narrative, sound, user interface, dialogue, and so on - is witnessing the vast expanse of games as an industry, and how it still has room to grow as technology evolves. And as the CEO of Northplay, Michael Flarup says, on top of there being no blueprint for a good game, you must make sure you're choosing the right business model for your game **(NP interview, 2021)**. Games and their content are also curated uniquely according to the country that distributes it. China, for example, has very strict rules on cultural content, while most European countries are more lenient, as long as the game adheres to the Pan European Game Information (PEGI) rating system which sorts the games into appropriate age groups **(PEGI, 2021)**.

Games are great examples of the economic principle that Caves **(2000)** calls *infinite variety*, which means that they are both horizontally and vertically differentiated; while one game can seem similar to another, and sold for the same price, some people love one game or another for a variety of subjective reasons. Furthermore, once a consumer has experienced several products, they may agree or disagree that one is better than the other. Despite being intimately knowledgeable about the production of a game, the game developer essentially takes on a high risk in creating the product, as there is little early indication whether the consumer likes it - in particular if it is a new and innovative game. Neither the producer nor the consumer knows whether they will like a game before it is fully produced and tested, which is another economic principle, *nobody knows*, prevalent in creative industries **(ibid.)**. One example of this is Northplay's latest game, Headland, which was created for mobile as a demo, rather than free-to-play: the first part of the game was free, and if you liked it, you could buy the full game. However, as mobile games often have a different business model the game ended up getting a slew of negative reviews due to this unexpected need for payment **(NP interview, 2021)**.

The complexity of games is further deepened by the fact that games can both be seen as mass produced, like AAA-productions (large, costly productions), or non-standardized, like small to medium sized game productions, much like the division between Hollywood-productions and indie films. According to Aubert et al. **(2003)**, two market failures can be described in relation to non-standardized creative products, which is the most common kind of product on the Danish market and is closely related to the two economic principles described by Caves **(2000)**. The first market failure is analogous to the nobody knows principle, although it takes it a step further. The *uncertainty of preferences* refers to people not initially knowing what kind of non-standardized product they like, while they are also uncertain of what they would possibly like in the future. The second market failure is related to the notion that *preferences are endogenous*, which means that consumers often choose to rely on their network when choosing their products **(Aubert et al. 2003)**.

While, in theory, games as a creative product present potentially infinite variety, it is obvious that, over time, a few successful companies have set the precedence for the production of games, or demonstrated dominant designs or genres, which other game studios often choose to follow.

Within these genres, success is often related to the balancing act between creativity and business rationalization, where game studios and their prioritizations undergo a series of isomorphous processes in their search for stability **(Tschang, 2007)**. From the three interviews with game companies, it is apparent that, although none of them are producing AAA-titles, they all try to balance their games between being commercially viable and culturally niche. This reflects the need for games to be a delicate mixture of entertaining, unique, and familiar; it indicates that game companies are aware that they must alleviate this ambiguity and that, if their product is too niche or only geared towards a small Danish audience, they may not be able to economically recoup the production cost, or to attract new consumers and word-of-mouth **(TTG interview, 2021; BDG interview, 2021; NP interview, 2021)**.

5.1.2 The audiences of games

Next, an understanding of the audiences. This subsection will establish how games have permeated our lives in many ways, and that the industry as a whole does not seem to be slowing down. Consumers of these creative products are an important part of the ecosystem.

Although it may be difficult to grasp the many different parts of a game and its production, it is apparent that the medium has penetrated almost every corner of the world. Around a third of the world plays games, with most gamers concentrated in the Asia Pacific and the US **(Screenrant, 2020; Techjury, 2021)**. Denmark is no exception; around half the population, all genders included, are gamers, and one in four people play every day **(Det Danske Filminstitut, 2019)**. In the report "Børns Spillevaner 2020", it is noted that 92% of children between 1-15yrs have played a digital game, and 51% of children in this age group play every day **(Det Danske Filminstitut, 2021)**. People can play on consoles, computers, handheld consoles, and mobiles, and thus, the distribution channels are broader ranging than ever. Furthermore, it is possible for people to create and join communities around games through channels like Steam, Discord, Slack, and Twitch, and through these give recommendations, share experiences and gain insight into otherwise individual adventures **(The Guardian, 2013)**. The COVID-19 pandemic has also had an impact on the game industry, albeit not in an entirely negative way. The increased necessity of staying indoors has seen

people take to their phones and screens in search of relief and entertainment, and 36% of Danish people aged 15 or older have used games more than they did before **(DR, 2020)**.

It is obvious that the market for computer games thrives and has seen a willingness from audiences to find their favorite genres, reference games from a large variety of studios, and create communities. With its multitude of distribution channels, the game industry has generally had success within their markets. This can be seen as an important element according to Isenberg's Entrepreneurship Ecosystem model **(2014)**, in which a market with early adapters, reference customers, first reviews and distribution channels is essential to the ecosystem. It should be noted, however, that games are products carefully balanced between familiarity and newness; the industry ultimately relies on incremental innovation and/or combinative creativity, and thus, the majority of players may prefer not to venture too much off the beaten path of their own experiences **(Tschang, 2007)**. Early adopters of innovative games are established with increased experience: the more you try, the more you lower both your uncertainty and your reliance on previously endogenous preferences **(Aubert et al. 2003)**.

The rise of the game industry has been a bumpy ride. According to the interviews, despite the variety of ages this medium attracts, games were initially intricately linked with toys and seen as something mainly used by children. This is reflected in the fact that Spilordningen was originally founded with the regulation that it was a way to fund games for kids **(SO interview, 2021)**. Much of the early discussion around games had its focal point in whether it was good for children, or if it incited violence or antisocial behavior. Stereotypes around gamers have pointed towards lone males in basements becoming increasingly obese and obsessive, and though this has been disproved, the media has perpetuated this image, while the industry, and some journalists has fought back to illustrate that games are as nuanced an art as books **(CNN, 2010; The Guardian, 2014)**. Games have made a whirlwind entry into our lives, illustrating a generational gap in which the generations that grew up with video games have come to understand the cultural and economic value of video games, while this eludes those who have not been in direct, prolonged contact **(NGC interview, 2021)**. The generation of Danish politicians currently in power may have children who play games, and may even show interest in games, but have little knowledge of what the industry entails. This makes it challenging for an industry to make itself noticed, in contrast to some of the

cultural products that Denmark is historically known for, such as film or design **(VD interview, 2021; TTG interview, 2021)**.

5.1.3 A manifold industry

This next subsection details the game industry professionals, the composition of a game studio, and the nature of the leaders in the industry. Traditionally, entrepreneurship is a well-defined position and quality but within the creative industries a different order and structure of organization can be observed. This is important when examining the game industry with traditional entrepreneurship models, as these externalities must be added to the equation.

5.1.3.1 Characteristics of a game studio

Although it is just as possible today to create a game by yourself as it was in the early days of game development, most studios consist of several people: one or more for the different parts of the game, like graphics, animation, programming, game design, administration, etc **(Gamespot, 2018; Tschang, 2007)**. Some startups have one person covering several complementary areas, or juggle one area while learning another: most commonly, the role of CEO, or another leadership position, is an on-the-job learning experience **(NP interview, 2021; BDG interview, 2021)**. Caves **(2000)** describes a team like this as a *motley crew* - a group of people with various different skills, working on a creative production. Usually, once tasks have been divided, all input is non-substitutable, and the task must be fulfilled for the final product to exist. To unfold this complexity of team structure, it is interesting to note that despite the categorization of games as a separate CCI segment in most mappings of the creative industries (see the UK DCMS model, the symbolic text model, and the concentric circles model, among other **(UNCTAD, 2008)**), the professions within the game industry also belong with several other creative segments in the same models, for example game narrative writers, music composers, and artists. This illustrates the cross-disciplinarity of resources that must be present for a game production to succeed.

Furthermore, people on the same team may have various levels of artistic vision and understanding of what can be sacrificed to maintain a specific profile. This is typically manifested as an interest in certain aspects of games, whether it is narrative, game design features or a visual style. Michael

Flarup from Northplay, for example, looks back at his games and finds that they are illustrative of his own interest in strong, entertaining gameplay. He also states that they have been able to reject work if he, or the team, does not find it interesting enough **(NP interview, 2021)**. Klaus Pedersen, from Bedtime Digital, underlines the importance of his art director for the team, who has laid down a strong foundation for the art style that they have been using and expanding on in their games **(BDG interview, 2021)**. Furthermore, many founders use bootstrapping as their first mode of financing, in which they do not pay themselves for the first months and, sometimes, other people will join without pay or with delayed payment for a given duration **(NP interview, 2021)**. These are examples of a principle which Caves **(2000)** calls *art for art's sake*, wherein creators value their creative work and vision more than they value the money they would otherwise get, had they taken on a different, possibly non-creative, job.

It is also interesting to note that almost all the interviewees mention that the industry is built upon the work of tireless and passionate individuals, whether in the studios themselves, the incubators **(IL interview, 2021)**, among the politicians **(DFI interview, 2021; NG interview, 2021)**, the interest organizations **(GHD interview, 2021)**, or among the press **(NGP interview, 2021)**. This reflects the precariousness of the industry and its front lines - if the political party in government includes a person who is interested in games, it may only be a matter of time before they are no longer in government with any power to lobby the industry. Similarly, if a passionate soul within the funding framework disappears, the fund may no longer be interested in supporting game development. The discontinuity of passionate people within the game development ecosystem results in a loss of implicit knowledge, which is not being passed on between the different agencies and companies and can result in the same issues being repeated throughout the political cycles.

Furthermore, several interviewees mentioned that, despite the successes achieved for the industry until now, the pool of experts in the area remains small and unvaried through time, pointing towards a homogenous group of male specialists in the industry **(TTG interview, 2021)**; and although this is slowly changing, the game development industry has historically been a male-dominated industry, particularly in the senior roles **(The Guardian, 2020)**. However, to call attention to this and make meaningful change requires continuous action and internal adjustment

which, currently, is not happening sufficiently in the industry **(TTG interview, 2021)**. This lack of interest in change from within the industry will be discussed in Section 5.3.

5.1.3.2 Founders as creative entrepreneurs

Entrepreneurship is often linked with creativity in the sense that it is innovative and transformative in nature, and that entrepreneurs must be "alert" to new opportunities **(Kirzner, 1978, as referred to in Patten, 2016)**. Creative businesses often find themselves in rapidly changing environments to which they must adapt, which is also highly accurate for the video game industry in which technologies, markets, and trends swiftly shift **(Bujor & Avasilcai, 2016; NP interview, 2021)**. However, many creative entrepreneurs do not align themselves with the classical image of entrepreneurs, in the sense that they identify themselves firstly with their work and only thereafter as being an entrepreneur **(Patten, 2016)**. As Christian from Ideas Lab says, many studios are not driven by the venture side, and although budgets and administration are considered, it is only by strict necessity rather than long-term strategic interest **(IL interview, 2021)**. This can also be traced further into the Danish industry and their vision of themselves as being a community first rather than an 'industry', which would connote a more competition-driven, optimization-focused environment **(DFI interview, 2021)**. This results in a very open and communicative scene, in which agents within can freely reach out to each other for business development support, recommendations, collaborations, and more **(TTG interview, 2021; BDG interview, 2021; NP interview, 2021)**. Bujor & Avasilcai **(2016)**, however, recommend that a complementary business manager become an integral part of the studio from the start and, at least, until the creative entrepreneur has sufficient knowledge of business development. As described before, business aspects are often learned on the job by many CEOs and founders in the game industry, and despite the learning opportunities this presents, preemptive entrepreneurial knowledge can often save much time and money for new studios **(TTG interview, 2021)**.

Few Danish game developers think about the business side and what they can do to make a successful business from the start, according to the interviews. Oftentimes, the company consists of friends from the same or related educations. As their interests align, they also typically initiate the company based on a project-based trajectory. It is difficult for people outside the business to join these companies, as they do not know the industry and wouldn't be able to produce anything

themselves **(TTG interview, 2021; GHD interview, 2021)**. An attempt to alleviate this gap is made through DADIU, which combines students from different universities in a semester of game development. However, it is notable that Copenhagen Business School is absent from the list of partners, despite its focus on entrepreneurship and management **(DADIU, 2021a)**. The combination of project-focused companies typically led by founders with a strong creative vision and the long production time of games does not invite for serial entrepreneurship in the traditional sense, as the creative entrepreneur strives towards a form of self-expression, which they aim to fulfill through the production of one or more games **(Patten, 2016)**. There may be cases of serial entrepreneurship in the sense that founders can have experience in other ventures, like design, web, or art, which can help them as they are building their game company but then they, typically, stay with the game company which they finally establish **(NP interview, 2021)**. Serial entrepreneurship is important to the entrepreneurship ecosystem as this leads to growth and knowledge retention within the industry **(Isenberg, 2011)**. Starting and running several successful businesses leads to valuable experiences that can be transferred within the ecosystem and should also lay the foundation for larger companies to evolve, which can then give back to the new entrepreneurs **(Isenberg, 2011; VD interview, 2021)**.

This tendency of having a strong creative and cultural perspective is, in a Nordic context, specific to Denmark. Looking at Sweden and Finland, there is a focus on business and innovation, respectively, which has developed from a strong historical tradition for technology and games **(Sotamaa et al., 2017)**. It is widely agreed that Denmark has the creative potential, the talent and the skills, but severely lacks the innovative and commercial parts, which would lead to more access to private investment, both nationally and internationally **(TTG interview, 2021; VD interview, 2021; NP interview, 2021)**. The game developer scene of Sweden and Finland is far more mature. Both countries had a strong connection to the telecommunication industry, where they would build games for the phones that were produced, and they had strong Amiga demo grassroot communities in the 1980s **(Sotamaa et al., 2017)**, which translated into the existence of experienced game studios at an earlier time than in Denmark. While Denmark had one large studio, IO Interactive, at the turn of the century, Sweden had four. **(VD interview, 2021; NGP interview, 2021)**. This is also reflected in the Swedish and Finnish policies towards game production. Finland has a large pool of money allocated for innovation in games and technology in their state foundation, TEKES,

while Sweden has little to no policy for supporting computer games specifically but has many favorable state-regulated conditions for entrepreneurship and startups **(Sotamaa et al., 2020)**. The third section of this chapter will elaborate on the Danish policy towards games.

The lack of serial entrepreneurship among the Danish game producers has some consequences when analyzed in the context of Etzkowitz' Triple Helix model **(2003)**. When the industry does not have the necessary serial entrepreneurship, and thus experience with business development, it cannot fulfill the extra role that a triple helix requires. They cannot provide the specialized training and knowledge-sharing that universities transfer to the industry, as they themselves are taking on an entrepreneurial role. This is also underlined by Isenberg **(2011)**, who states that it is necessary to have sufficient human capital in an ecosystem if knowledge and networks are to be continuously developed, especially in a fast-paced industry as games **(TTG interview, 2021)**. As noted by Michael Flarup from Northplay, currently, the industry is too busy surviving and doing their own thing to be thinking about what they can do for others **(Northplay interview, 2021)**.

As a conclusion to this section of the analysis, in which we have examined games as products and the people who produce them, it is possible to say that, due to the nature of the people and companies in the industry, the game industry has several layers of complexity to be considered. There are quite a few specialized educational programs to become game developers, but only DADIU gives the students a short introduction to team management and production processes. This creates a situation in which game developers must learn business management on the job, which can lead to both great experiences as well as unnecessary failures. They must manage several specialized people, all with different personal attitudes towards the various aspects of the product. Games are complex products, both innovative, cultural, and commercial, and in Denmark many game production companies consist of people driven by a strong creative vision, rather than by revenue. This means that companies are not driven to be successful businesses, but rather successful creators, which leads to fewer companies of various different sizes, and less people who build several successful companies.

5.1.4 Consequences of complexity

The complexity of games, both conceptually and production-wise, has consequences for the industry on a policy level. First and foremost, this is reflected in the reluctance to place games as an integrated part of any regional or municipal policy, whether regarding industry, culture, innovation, or education. As Klaus Pedersen of BDG notes, oftentimes, different ministries are passing game studios around in their search for a permanent spot. The industry says to look to culture, and culture sometimes sends you on to innovation and tech departments, but games are often not tech enough **(BDG interview, 2021)**. This is seconded by Astrid Refstrup from TTG, who says that games are all of the above, both culture, tech, and industry **(TTG interview, 2021)**. Games should also be an integral part of education, according to Simon Løvind from DFI. Denmark has a strong pedagogical tradition for including Danish content, like films and books, in schools, so it seems counterproductive not to include games as a new educational format as well **(DFI interview, 2021)**. Many policymakers have little knowledge of the game industry and its processes **(VD interview, 2021)**, but there is also a distinct, almost active, disinterest from politicians in games, which is confusing many people in the industry **(NG interview, 2021; TTG interview, 2021)**, as this is one of the fastest growing industries in the world.

Some progress can be seen around the hotspots. The only municipality which has included games as part of their industrial policy is Norddjurs Municipality, an area which also accommodates Game Hub Denmark and three game-focused schools: the 3D College, Dania GAMES and the Game College. In their policy report, they describe gaming as an area with potential growth, reflecting the awareness of synergy between industry, education, and policy **(Norddjurs Kommunes Erhvervsstrategi, 2020)**. They are able to educate people at the various schools, and then send them through a series of institutions, namely Game Hub DK and Ideas Lab, to ensure the viability of these entrepreneurs and help them understand the business side of games, create networks, and share knowledge **(IL interview, 2021; GHD interview, 2021)**. The municipality of Aalborg has also had a greater interest in games and has pointed to the industry as having potential for growth. They are partnering with Gamehub Scandinavia and established GamesBusiness, a conference on the business of games (lasted two years). Further, there is a games-focused consultant at their business center, BusinessAalborg, who also manages the Northern Angels, an

angel investor network in Northern Jutland **(BusinessAalborg, 2015; Linkedin, Thomas Lykke Camin, 2021)**. The political aspects of the Danish ecosystem will be further explored in the third section of this analysis which deals with the lack of political interest and the increasing centralization of processes within the political system.

These are examples of the growing interest in, and support of, the digital content producers in Denmark, particularly for the business development in game production. However, the industry is still falling short when it comes to making a thriving business out of their passion and the political initiatives are still fragmented due to the lack of a mutual understanding between the politicians and the industry stakeholders. These themes are at the front and center of the two forthcoming Sections 5.2 and 5.3 of this study.

Based on the complexity of the industry and its products, one recommendation for the private-public policy relation is to map the industry through Pratt's **(2004)** creative industries production system. This would clarify the production chains that a game goes through as it moves from an idea to a distributed product. In his model, there are four steps which can be elaborated further, and more steps can be added, like education and preservation: creation/content origination, manufacture, distribution/mass production, and exchange. If such a model was used within the interest organizations and the game development studios, it may create a foundation for politicians to understand the influences of political actions at each step, and (re)evaluate these if the negative consequences are too great **(Pratt, 2004)**. Furthermore, a mapping of the industry and its production processes would be necessary for the formulation of informational reports on the game industry, where opportunities and risks could be assessed for the use by angel investors and other interested parties; Sweden, for example, published a report on investments in games in 2017 called FAITH, which helps the agents in the ecosystem disseminating information about the possibilities in games to the relevant parties, like how the industry is structured, and what an investor should consider when investigating the game industry **(Dataspelsbranschen, 2017)**

5.2 Challenges in the game development industry

Now that we have a solid foundation of knowledge about the product, the industry, and the people, we can investigate one of the most mentioned weaknesses that the industry suffers from: a lack of business acumen. This leads to difficulties when discussing and searching for access to funding and impacts the entrepreneurial activity in the Danish game industry. Furthermore, the few options left within public funding has had a negative influence on the Danish production of games which will be investigated further. First, however, it is necessary to understand the Danish conditions for entrepreneurship and their consequences.

5.2.1 A bumpy ride from the start

"I think there's been many Danish studios that have been terminated even though they've gotten the prototype funding, and I think that's because they need to not only see themselves as game designers, but have many different hats on - selling, marketing, the whole process. And when you're in a company with three others, you need to be able to take on multiple roles. You also need to know the whole ecosystem."

- Jacob Riis, Nordic Game Program (Interview, 2021, 39:10)

Entrepreneurship is a very important topic for Denmark. It is often put forward as a driver of economic growth and job creation and argued that it should be attractive to start and maintain a company in Denmark, no matter where you are from **(Dansk Industri, 2021)**. However, not all entrepreneurial action is equal. Mason & Brown **(2014)** argues that entrepreneurial ecosystems should be focused on high growth firms (HGFs) only as these companies are the ones which increase innovation, drive productivity growth, and create new employment opportunities. Thus, the current trend in policymaking, which is to encourage all entrepreneurship, is not the optimal way to achieve these goals.

Napier **(2013, as referred to in Mason & Brown, 2014)** found that Denmark had some of the most favorable conditions for entrepreneurship but has failed to generate HGFs. Instead, Denmark has a high level of solo or continuously small companies, whose income is under the poverty line.

This phenomenon, of having difficulties with producing HGFs in Denmark, was also analyzed by Edquist & Lundvall **(1993)**, who compared systems of innovation in Sweden and Denmark. They found both historical and structural differences which have put Sweden in a better position than Denmark, and which may also be able to illustrate the difficulties that the Danish game industry is experiencing. Among other things, they point towards political culture as one explanation; while Sweden has been politically stable as modern liberals for many years, Denmark increasingly swings left and right, making it difficult to achieve long-lasting social compromises.

This inability to generate HGFs is reflected in the game development studios. They are, as previously described, often created by a few friends, fresh out of university, and have trouble scaling due to the complex production process, the uncertainty of demand in games **(TTG interview, 2021)**, and because they have little to no experience with running a business **(NP interview, 2021)**. It is also reflected in the average number of people in a game studio which, since 2010, has varied between 4,9 and 5,5 persons **(Producentforeningen, 2018)**. This is, of course, not the case with the few successful companies, like SYBO or IOI which both have over 100 employees, but it does testify to there being very few companies in the middle ground between startups and giants, as Michael from Northplay states. This makes it difficult to document the journey that these companies take, and the knowledge they accumulate **(NP interview, 2021)**. This gap in size and experience can also be seen in the turnover of the Danish game industry, which is characterized by 10% of the companies being responsible for 98% of the turnover in 2018 **(Producentforeningen, 2018)**.

During the interviews, several respondents indicated that it is difficult to start up and maintain a business in Denmark, and while relating particularly to games, this is something which affects the entirety of Danish entrepreneurial activity. Christian Nyhus from Ideas Lab went as far as to say that the Danish system is entrepreneurship-hostile; his reasons being that there have been very few tax incentives to encourage people to build something of their own, and the regulations and rules are difficult to figure out for newly started companies **(IL interview, 2021)**. It should be mentioned, however, that further discussions on tax incentives are outside the scope of this thesis. Klaus from Bedtime Digital also explains that initiatives to make entrepreneurship easier have been too shortsighted to actually make an impact. An example being that people used to be allowed

unemployment benefits for six months while setting up their company, but that this initiative was discontinued in 2018 **(BDG interview, 2021)**. This is also illustrated in the IVS (iværksætter) company formation policy, in which it cost a single krone to establish a company, which was initiated in 2013 but already concluded in 2021 **(Erhvervsstyrelsen, 2021)**. For the existing game firms, there is no upside to being first movers either, when it comes to creating new business forms or utilizing resources in new ways, because there are strict regulations on hiring and employment **(NP interview, 2021)**. These kinds of challenges for entrepreneurs are not taught in school or presented to the people before they start on their own. At DADIU, they are taught to make games but not to run a good business **(DADIU, 2021b)**. Furthermore, all interviewees underline that the political cycles and disinterest continue to be a challenge for the young industry, which will be elaborated on later. Lastly, centralization of political processes has had unintended consequences for the industry, and despite political lobbying and industry successes, these effects have not been analyzed and rectified **(IL interview, 2021; NG interview, 2021; TTG interview, 2021; NP interview, 2021; DFI interview, 2021)**. Section 5.3 of this chapter will be dedicated to such an analysis.

As demonstrated above, Danish entrepreneurs have difficulties from the start - not only game studios, but in general. However, the game industry is also faced with its own particular complexities, as there is a tendency to start companies straight out of school, where no particular interest is shown in teaching business skills. At the same time, the specialization of game development and their close-knit community may hinder the companies in utilizing outside knowledge to help them build their business. Lastly, we notice that Denmark may have introduced measures that make founding and maintaining a business more difficult for both entrepreneurs and investors.

5.2.2 (Creative) entrepreneurship as a difficult journey

"When it's a young industry, a lot of knowledge is still missing, and so all the people starting up their own company are usually very inexperienced.. And they'll end up with a lot of expensive self-education in the process."

- Astrid Mie Refstrup, Triple Topping Games (Interview, 2021, 12:18)

The difficulty of starting and maintaining a new company is something which is widely acknowledged within the industry. Even with the DADIU semester where management and entrepreneurial action is brought into focus, and from which Bedtime Digital was born, it doesn't necessarily mean smooth sailing after school ends **(BDG interview, 2021)**. Not everyone wants to take on the risk of being a founder either, which often results in one person taking on most of the risk of failure **(NP interview, 2021)**. The stress and risks of becoming entrepreneurs are often underplayed in education where, oftentimes, a positivity bias of entrepreneurship is presented, and where the claim that "it is okay to fail" is constantly being pushed **(Golik & Ziemianski, 2020)**. This is also the case with games, where most of the development revolves around agile processes, pivoting and failing, until the game works - and until an appropriate business model is achieved for the game studio. While this is a revered approach within software, and is more efficient than a waterfall model[2], it does not take into consideration the psychological toll this can take on a person **(Shepherd, 2019)**. This is also apparent in the stories about some of the most ambitious Danish studios and their lost dreams, as described in Kristiansen and Lohdahl's book about the Danish game industry, "#dkgame: Historier fra den danske spilbranche" ["Stories from the Danish Game Industry"]. Despite the trauma that comes with these difficult times, the industry looks at it as a new beginning in which everything becomes a learning curve **(Kristiansen & Lohdahl, 2019)**.

These stories are presented, in education and in the media, as the result of nothing but hard work, sacrifices, and, in some cases, genius. Very rarely, in tech, is there any mention of the equally important elements of luck and timing. Like Playdead, who took a chance and got on Microsoft's Xbox Store early on **(VD interview, 2021)**, or Northplay, who was lucky enough to get into the Apple App Store early in its development, before the mobile game landscape became flooded **(NP interview, 2021)**. These seeming success stories live on and are the subject of replication in the industry with companies attempting to build up a similar story around themselves. However, if the conditions of such successes cannot be replicated due to the swift development in tech, new entrants will not necessarily understand why these attempts may fail **(Medium, 2019; TTG interview, 2021)**.

[2] A model which breaks a project into linear, sequential phases.

These narratives around the neoliberal entrepreneurial self and taking risks comes with the belief that this leads to true freedom and empowerment. This necessity of freedom can also be connected to the previously discussed creative entrepreneurship **(Patten, 2016)** and economic principle of art for art's sake **(Caves, 2000)**, wherein creatives are particularly prone to value their freedom of artistic expression over profit or revenue. This "responsibilization" of the self **(Besley & Peters, 2007)**, is evident in, for instance, funding opportunities like Vækstfonden, where game studios must attract investors before the government will invest **(VF interview, 2021)**, and in the remodeling of universities into taking on a more commercial role, like Etzkowitz **(2008)** is proposing.

Isenberg **(2011)** furthermore points towards a propensity of governments to try and pick winners by boosting certain industries through subsidies, a policy tool which may be easy to wield but does not encourage the politicians in holistically looking at the system in which these industries are operating. An example of this is the way that Denmark spent millions in support of the wharfs and steel industries, despite their decline. This approach was abandoned but has since affected the Danish industrial policy to a point where there are still considerations of picking and choosing the industries which should be supported **(VD interview, 2021)**. When an industry is encouraged to thrive through the continuous application for government funding, it has consequences for the evolution of the companies. Shane **(2009)**, having studied the phenomenon intensely, underlines that policymakers often set up entrepreneurs as a way to create more jobs and increase economic growth. However, his study shows that this is not the case and that subsidies for non-high-growth industries should not be utilized to encourage entrepreneurship. The interesting thing to notice is that these subsidy entrepreneurs, as Shane calls them, have lower productivity but higher wages **(ibid.)**. This is not something which can be confirmed or debunked within this study, but the wages in game development are usually around DKK 30-50.000 per month for a full-time job **(TTG interview, 2021)**, and thus comparable to other Danish jobs of similar expertise levels. As most games require several years of development, it is difficult to say, within the framework of this study, whether the length is due to low productivity. Nevertheless, the dependency on subsidies is not going unnoticed in the game industry, and most stakeholders on the outside of game studios, in interest organizations and investment agencies, are asking game studios to focus less on subsidies and more on creating a solid foundation for the company **(NG interview, 2021; VD**

interview, 2021). The companies themselves are also aware that the Danish developers, in comparison to our other Nordic neighbors, are known to be particularly inefficient at pitching and learning the language of business as a consequence of being project-driven **(NP interview, 2021; TTG interview, 2021)**.

However, as touched upon throughout this study, whether governmental subsidies and support for entrepreneurs have a negative or positive influence is dependent on entrepreneurs and firms following traditional economic principles and limitations. As we have already established in the Section 5.1 of the analysis, game development and the industry are much more complex than your average software company and may thus need a different approach than simply removing subsidies.

5.2.3 The Danish game development ecosystem is fragmented

Even in an increasingly individualized risk society **(Beck, 1992, as referred to in Besley & Peters, 2007)** it is clear that other parts of the ecosystem of Danish game developers are not currently functioning. Access to funding, mentoring, incubation, and developing talent are some of the most pressing issues, which reflect an ecosystem in which the connections are not yet fully considered.

5.2.3.1 The lack of funding

From the interviews, it is possible to conclude that there is a lack of funding that can lift game developers from Spilordningen to Vækstfonden. This is also called the *Death Valley*, as this is where many companies, after establishing themselves, hit a wall in terms of funding **(VD interview, 2021; TTG interview, 2021; NP interview, 2021; DFI interview, 2021)**. To visualize this, I have expanded a model which Jan Neiiendam showed me during our interview **(VD interview, 2021)**. Appendix 5, despite not being exhaustive, outlines the Danish initiatives and events, while contrasting it to the amount of funding and relational support existing.

As can be seen, the smaller the company is, the more community-oriented the initiatives are, but the less funding exists. As a company grows, it gains access to more business-oriented initiatives,

but the funding activities and amounts are still limited to either tech or art. Finally, as the company fully matures, it enters a new world of funding where Vækstfonden and Nordisk Games are more than willing to invest and offer relational support. According to Mason and Brown **(2014)**, relational support must be given throughout the growth of the company, as this will not lose its benefit as a company becomes more established. And although both Mason and Brown **(2014)** and Isenberg **(2011)** acknowledge the value of early funding, and at the same time also discourage government support, this kind of governmental VC is essential to the triple helix model, as the government's supplemental role in the helix is to fulfill some of the responsibilities of the industry **(Etzkowitz, 2003)**.

While it is debated within the theory whether governmental support of entrepreneurship is effective or not, Jan Neiiendam also explains that the current political system of funding is fragmented to a point where there are no longer any overlaps between the financing available:

- Innovationsfonden only funds technological innovation **(VD interview, 2021;VF interview, 2021)**;
- Spilordningen only funds games with cultural value and do not lean too much towards commercial goals **(ibid.)**;
- Vækstfonden only invests if there is private investment which can function as an abatement of the risk taken **(ibid.)**.

Despite the existing Danish supporting policies for entrepreneurship and growth, there is no guarantee that this helps the game developers. Jan Neiiendam looks to Sweden, where game developer startups do not have any political support, but the game industry is flourishing. While there are some historical explanations to this, as previously described, Jan points to their normalization of stock market listings and their focus on business first, rather than a project-oriented approach **(VD interview, 2021)**. Therefore, Jan Neiiendam is focusing on making sure that the firms already established are competent at running their companies, which is also shown in their previous, very successful program SOLID, which focused on agile business development. However, as the program was closed down and nothing has since been initiated, the industry has

lost a learning opportunity. Jan is currently working on starting something similar as SOLID, as this is something which he has observed is lacking **(ibid.)**.

5.2.3.2 Incubators and accelerators: a new generation of entrepreneurs

This brings us to what most people in the interviews see as a solution to this challenge of missing business acumen - the establishment of incubators and accelerators. This is also derived from the fact that all three firms interviewed have experienced an incubator program: two have participated in the SOLID program **(TTG interview, 2021; BTD interview, 2021)**, operated by Interactive Denmark, and one has been part of Y-Combinator **(NP interview, 2021)**.

Allan Kirkeby, from incubator Gamehub Denmark, sees incubators as important because they are a place of transition: from student to startup, from project to company, from local to international. He sees Gamehub Denmark as a way of maturing people to think about success for the company, rather than just for a single game **(GHD interview, 2021)**. As part of a smaller ecosystem in Norddjurs Municipality, also described before, he also thinks the incubator is good for recruiting and scouting talent **(ibid.)**. This viewpoint is shared by Christian Nyhus from incubator Ideas Lab in nearby Aarhus, which is a cross-media incubator, also taking in companies within film, animation, and VR. Christian, the daily leader of the incubator, underlines that the incubator is a lever for the creative environment, increasing the quality of entrepreneurship in the area **(IL interview, 2021)**. But these are also the only Danish incubators focused on the game industry, in whole or in part. This is not to say that there are no other incubators in Denmark - there are about five very well-known incubators **(EU-startups, 2019)** - but the importance of having industry-specialized incubators and accelerators is increasingly underlined in research. Naz et al. **(2020)**, for example, concluded that industry incubators should be established as spaces for training and education **(Campbell, 1989, as referred to in Naz et al., 2020)**, which needs to be in line with the challenges that are currently facing the Danish game industry and that may stimulate it in the future. Incubators are also a vital part of the entrepreneurship ecosystem, according to Isenberg **(2011)**, as they ensure the viability of HGFs and their business development skills later, so that they may be able to become serial entrepreneurs. Jan Neiiendam understands this need for "crea-tech incubators" and aims to establish one within the framework of Vision Denmark **(VD interview, 2021)**

Besides training and education, incubators can also have a double function as a kind of knowledge intermediary, both within established firms as well as public-private initiatives. Traditional incubators act as fundamental elements within the entrepreneurship journey, where newly started firms can attain knowledge and support necessary for creating economic growth. They are also the centers for knowledge, innovation, and technology transfers **(Onyemerela and Obaji, 2015)**. Corporate incubators, understood as larger firms also including startups within their practice, are not particularly well researched although significant differences can be found between incubators and corporate incubators; the first being a greater knowledge transfer between business units as a result of the embeddedness of the incubator into the corporate structure **(Kötting, 2019)**. Corporate incubators combined with the current practice of taking in interns, is also strengthening firms in taking on an educational role, like the Triple Helix model dictates **(Etzkowitz, 2003)**. This, however, necessitates a much more mature ecosystem, in which companies have surplus time and enterprise to build such a framework, which is not present in the Danish game developer ecosystem yet. The largest current firms are only now becoming able to give back in a systematic way; most are small studios which are unable to focus on anything else than their own survival **(NP interview, 2021)**. It is, however, slowly happening in other ways: SYBO, for example, has over the last couple of years started giving back to the system through network and investments **(Techsavvy Media, 2021)**.

In a Nordic perspective, it is important to note that Sweden has seven game-related incubators, while having almost no policy focused on games, and Finland has two, as well as a variety of VCs, including their government institution for business development, Business Finland, which also acts as VC **(Baltic Game Industry, 2019)**. For a list of country game industry profiles, see Appendix 6. While the relation between industry-specialized incubation and game-focused government policy is beyond the scope of this paper, this particular subject may warrant further study as new policies are being introduced for the Danish game industry. As Denmark presents a policy and industry mix between that of Norway and Finland **(VD interview, 2021; DFI interview, 2021)**, it may be more interesting to look to Sweden for a completely different model of building an ecosystem, seeing as they are particularly good at educating their workforce in business development, and have a thriving game industry. Christian from Ideas Lab does not necessarily think that new incubators are needed, but he thinks that the government should focus on the already

existing ones **(IL interview, 2021)**. However, new initiatives do not necessarily need to be physical, as one of the biggest costs of incubators is the cost of having a physical space **(TTG interview, 2021)**. With a global industry comes the possibility to create global incubators, where Danish and international studios can come together and share knowledge. The new initiatives must therefore also focus on continuously diverse and global industry experts, so as to ensure the highest quality of programs offered **(ibid.)**.

Now that we have a greater understanding of the issues facing the Danish game industry, it is time to look at what kind of political action could be initiated to build a stronger foundation for the growth of the Danish game industry.

5.2.3 Political alleviation of the industry's biggest challenges

As shown above, the lack of business acumen and the fragmentation of options within the ecosystem are some of the greatest issues facing the Danish game industry. While the political activities causing these fragmentations will be further clarified in Section 5.3, it is possible to delve into what kind of political initiatives might mitigate some of the pressure currently facing the Danish game industry.

The literature offers fervent discussions on whether the government should make it easier to become an entrepreneur, and there is no easy solution to this problem. Policy encouragement of entrepreneurship should accurately reflect the difficulties of taking on the risk and the psychological and financial toll **(Golik & Ziemianski, 2020)**. At the same time, it may be valuable to create the framework to ensure better growth through specialized knowledge intermediaries in the development centers of the hotspots, so as to better put the entrepreneurs in the center of their business education **(Elfving et al., 2008; Parker and Hine, 2011)**. These knowledge intermediaries would function as bridging assets. Hence, they would need dependable and continuously updated expertise from the game industry, with experience in the field **(Elfving et al., 2008)**, and, particularly, within the creative industries, as these industries often operate under different circumstances than other industries **(Caves, 2000)**. In this aspect, we depart from Etzkowitz' macro-model, which has been criticized for neglecting the individual entrepreneur,

which has been shown to be the case with the Danish game industry, as it has been suffering from political disinterest **(DFI interview, 2021; NG interview, 2021)**. The government has been mainly focused on the CCIs and their economic value as a whole for Denmark, while neglecting to understand the individual industry and its agents. A stronger connection between the business centers and the industry through specialized knowledge intermediaries would support the game industry in getting the necessary information to run a better company, while helping the industry to feel politically seen.

In line with a greater focus on the individual entrepreneurs and transfer of knowledge, there is a need for educating newly started game studios in dealing with their inherent dichotomies and creative focus. To ensure that the future entrepreneurs will have a better foundation for developing their business management skills, and focus more on the firm than on the individual project, political support for existing or additional industry-specific incubators is recommended **(Naz et al. 2020)**; particularly incubators within the geographical areas which already have game-related education, like Aalborg, Grenaa/Aarhus and Copenhagen, to allow for the development of several smaller game ecosystems within the larger ecosystem **(Isenberg, 2011)**. As described before, this does not need to be physical, but could also be a virtual incubator, which would be accessible from all locations.

Besides the direct political involvement, it is also understood that the Danish game industry must look to different avenues for their business development. This includes alternative ways of collaborating and finding funding, which should also be introduced within schools and incubators. One of the ways that Astrid Refstrup from Triple Topping Games has expanded their business has been through third-party publishing **(TTG interview, 2021)**. Another way is crowdfunding, which has been utilized by Northplay **(NP interview, 2021)**, and which has become a viable alternative way of raising money in a short time for many video game companies. This model also allows for the users to feel even closer to the creators of their favorite games through partial ownership or the like **(Szczepaniak et al., 2020)**. This may also be encouraged through the moderation of new political frameworks, although a further elaboration of this is outside the scope of this analysis.

It is now possible to put together an image of the complex Danish game industry. While making entrepreneurship more difficult may not be the solution, more focus should be on making sure that the upcoming entrepreneurs have a better understanding of the risks involved. However, as there are not enough large companies to take in educated people and teach them about the business before they build their own, game developers seek to make their own company without much knowledge of running a business and are reluctant to hire a businessperson to support the management side. If government subsidies are introduced as a solution to support the industry, without increasing the access to experience or knowledge of how to lead a business, the Danish game industry ecosystem will continue to consist of mainly smaller firms, which do not reflect the growth potential of the industry.

5.3 Policy processes and mutual lack of interest

Now that we understand the complexity of the product and its creators, some of the biggest challenges in the industry, and the political consequences of these, it is time to explore the last of the themes which surfaced in the interviews: the structure of policy in Denmark and the mutual lack of interest between the people in government and the Danish game industry. Building on top of Sections 5.1 and 5.2, which also mentioned the connection to policy, this will give us the last pieces to answer what policy intervention can do for the Danish game developers. Of particular interest will be the process of political centralization which inadvertently has had a great influence on the precarious position of Danish game development.

5.3.1 A young industry: where do games belong?

"Figuratively speaking, you have to write one type of application which says cultural policy, when you start your company, and then you have to write another application where it says innovation policy, but which cannot under any circumstances be culturally oriented, but needs to be about technology, business models and revenue, and then you have to patch those two together as you're sitting down in your shop, and then go to Vækstfonden, which is a whole other ball game, and this is just too complicated a road for a Danish company"

- Jan Neiiendam, Vision Danmark (Interview, 2021, 58:32)

This part of the section will analyze where games are currently placed within the Danish public policy and, more specifically, within cultural, industrial, educational and innovation policy. Each policy section will end with a conclusion as to how games fit in and how this could be improved, based on the theoretical framework chosen by this study.

5.3.1.1 Cultural policy

Games as a creative product, with their previously described complexity, hold an uncertain position within the Danish policy. Culturally, it was placed in the same financial agreement as film and TV, and has been there since 2007 **(Det Danske Filminstitut, 2018)**. This medium has a long history of success in Denmark and abroad and, as a cultural product, has been used as a way of expressing Danish values and culture **(Duelund, 2001)** and is frequently commissioned by public services like DR. Games started in Filmaftalen as a part of the talent development category in 2007, and administered an amount of DKK 3 mio per year in the first four-year agreement. Today, a minimum of DKK 40 mio is allocated for games over four years. This is a stark contrast to the DKK 1.7 bio which is given the development, production, and dissemination of films (**Kulturministeriet, 2019)**. The interesting thing to note in these financial agreements is the lack of details and evaluation given to the digital game section - it has been almost unchanged in its wording for more than ten years - reflecting the lack of interest in developing the industry as a cultural product. Without political evaluation, it is not possible to understand the needs or the future of game development and its value for the Danish society **(ibid.; DFI interview, 2021)**.

Although the increasing cultural funding for the Danish game industry is seen as progress **(DFI interview, 2021)**, the relationship between film and games has been seen as problematic for many developers and agents within the industry. Chief among the opinions of the current arrangement is that films and games are simply not comparable; they are two completely different mediums and should thus be evaluated as such **(NG interview, 2021; DFI interview, 2021)**. Putting games under the umbrella of film, and with such a small notice, devalued games culturally and commercially, despite it being an industry with a larger export than film and TV together, as described before. In the interview, games were often mentioned as having an inferior position to film **(NGP interview, 2021; IL interview, 2021; DFI interview, 2021)**. Furthermore, it was a bumpy start for the link, with the agreement initially including direct support to what they called

interactive films, before they were supporting games, which many game developers saw as a slap in the face **(DFI interview, 2021)**. It has, by many developers, been seen as a sort of zero-sum-game, where some of the cultural money should be transferred as support from games **(VD interview, 2021; TTG interview, 2021)**. This is, however, the wrong way to think about it, according to the ones that work with the industry interest organisations, like Vision Denmark and Producentforeningen. Instead, it is necessary to complement the existing cultural policy with industrial and innovation policies **(ibid.)**. This paper's recommendation for Spilordningen is to separate it from Filmaftalen and expand it to commercial projects as well as evaluating it on a yearly basis to estimate the necessary funding **(DFI interview, 2021; BDG interview, 2021)**.

Taking a Nordic perspective, the Danish setting is somewhat similar to the position which Norway has taken, where games are also managed as a cultural product under the Norwegian Film Institute. However, the Norwegian budget for game development in 2021 alone is 45 mio. NOK (app. 33 mio. DKK), compared to the Danish support of 40 mio. DKK over four years and is expected to increase further as part of the Norwegian focus on games in their initiative Spillerom 2020-2022 **(Norsk Filminstitutt, 2021)**. The Norwegian government can be seen to focus on games, and with far greater funding. This position, in which games are purely cultural products, have been pointed out as limiting the export of Norwegian games, however, as they are usually required to be in Norwegian and have a stronger sense of national values **(Sotamaa et al., 2020)**. At the same time, the Danish setting is also similar to what Finland is doing though they have a much more balanced ecosystem, and a longer history with the computer game industry through its activity in the demo-scene of the 1980s, from which many of the big companies can be traced **(Sotamaa et al., 2017)**. The Danish and the Finnish model are similar in the sense that there is a mix of cultural, industrial, and innovational policy interest, albeit Finland contains a much more mature and well-organized industry with considerably stronger public-private connection, and more specialized policy to support the Finnish game industry. For example, the Finnish governmental agency Business Finland (previously TEKES) has a specialized unit acting as both VC for all business stages and cultural support **(Business Finland, 2021a)**. They also have a variety of private equity funds for games **(ibid.)**. This is entirely different to Sweden, which has no specialized policy towards the game industry, but has had a stable and efficient regulatory system, and a focus on business development and incubation **(Baltic Games, 2019; Sotamaa et al., 2017; VD interview, 2021)**.

Another challenge presents itself as the funding options for game developers is analysed. Today, there is no funding for SMEs which do not have a purely cultural or technological requirement; this is conducive to new game developers entering into projects with high cultural value or pure technological advances, but often very little commercial potential **(TTG interview, 2021; VD interview, 2021; NP interview, 2021)**. Adding to the last section of this analysis, another major consequence of the focus on cultural games is that this does not teach game developers to learn the language of investment, making it difficult for a game company to seek international funding; it furthermore encourages these to simply live on the Spilordningen funding, leading to smaller games, and subsidy entrepreneurship **(NG interview, 2021; Shane, 2009)**. The lack of funding for SMEs in the game industry comes as a result of the closure of CAPNOVA **(DFI interview, 2021)** which, as a consequence of centralization, will be touched upon later in this section. While it may not be the correct political solution to create an entirely new funding option for SMEs in the industry, as this could encourage subsidy entrepreneurship **(Shane, 2009)**, several people in the interviews wished for a refinement and expansion of the existing funding opportunities. This included a re-evaluation of the decision to transfer the responsibility of CAPNOVA to Vækstfonden, and instead create their own game foundation, which could function in much closer collaboration to Spilordningen than Vækstfonden can today **(VD 2021, interview; DFI interview, 2021; IL interview, 2021)**.

From the above, it is possible to conclude that the current position of games within the cultural policy is subject to criticism. The inclusion of games within the framework of film and film support sends a signal to game developers and politicians alike that games are not worth as much in themselves as films are - that games are inferior cultural products to film, which is hailed as true art, worthy of support. Despite the increase in the amount given to games through Spilordningen, it fades in comparison to the support given to film, which has a much smaller audience than games and approximately half of the export **(Producentforeningen, 2021)**. The level of descriptive detail and evaluation of the section defining the digital game support is furthermore untenable, as this reflects an inability to understand how to develop games as a cultural product. However, this may also be caused by the missing organization within the industry, so as to distinguish between cultural support to directors, talent development, commercial games, etc.

There are different opinions on how to proceed with games as part of the cultural policy. While Shane **(2009)** would deter from creating more subsidies to complement Spilordningen, or to even expand the current policy, Aubert et al. **(2004)** would argue that subsidies should be introduced to activate the network externalities that cultural activities entail, including increasing welfare, greater variety of games, and thus more evolved preferences, and increased habit formation. Furthermore, Potts **(2007)** argues for a policy development which brings cultural policy closer to the creation of economic value, which would suggest understanding the different types of creativity and giving space for exploration; seeing as this would greatly complicate the current system of Spilordningen, Potts recommend using a coordinative service to aid in the setup **(ibid.)**.

Finally, and on a different note, it is seen that the global nature of games, and thus the necessity for international talent and retention of this, is difficult for the Danish government to embrace. In recent years, English language at Danish educational institutions has been closed, as it is seen that many of the international students do not stay in the country after ending their studies **(Information, 2018)**- not only in software, but in various other sectors **(ibid., Computerworld, 2019)**. This can be understood as a movement towards the protection of the culture of a small country like Denmark, and towards a revitalization of national unity as a way of creating a stronger distinction between *us* and *them*. This reflects a political action towards improving the Danish culture at the expense of support for cultural products which are marketing themselves to a global audience **(Duelund, 2011)**. However, as the ecosystem in Denmark is not mature enough to produce firms that continuously hire new people, it is no surprise that much of the Danish educated talent must seek their careers internationally **(IL interview, 2021)**.

5.3.1.2 Industrial policy

As briefly mentioned before, game development as a high-potential industry was included in the industrial policy of Norddjurs Municipality in 2017 as the only Danish initiative to do so **(Norddjurs Kommune, 2017)**. The report states the necessity of utilizing the potential of industrial development originating from the game related education in the area, and the creation of new jobs because of this. They also specifically mention that the area has the possibility of becoming a blooming ecosystem, seeing as this municipality encompasses several levels of education as a provider of talents, an incubator for the creation and support of startups, and newly

started companies, which they need to encourage to stay in the area through a focus on international partnerships and collaboration **(ibid.)**.

This does not only reflect an understanding of the entrepreneurship ecosystem presented by Isenberg **(2011)**, in which policy, education, incubation, infrastructure, and entrepreneurship conditions are entangled, but also a better understanding of the complexity and global nature of games, as described in the Section 5.1 of this analysis. The interviewees repeatedly pointed to the importance of including games in regional industrial policies in municipalities with a game development cluster. Jan Neiiendam mentions this as the reason for initiating Interactive Denmark - that, despite games being rooted in cultural policy through the Danish Film Institute, the work of the interest organizations is not done **(VD interview, 2021)**. He also indicated, however, that the politicians might consider their work as being done, in the sense that they have already allocated an additional DKK 17 mio. to Vækstfonden for them to invest in high-risk creative industries **(ibid.)**. More funding has also been secured in loans but, in reality, the game studios rarely use this kind of "hard money", as Christian Nyhus underlines **(IL interview, 2021)**. This picture nevertheless presents a limited understanding of how an ecosystem works, as this is simply one of many initiatives that needs to be launched to have a holistic approach **(Isenberg, 2011)**. Furthermore, the injection of risk capital for creative industries into Vækstfonden is not equal to the government acting as a VC, as Vækstfonden remains a system where the game studio must find their own business angels first before the government will double the investment. The government is thus not taking on the risk of being a VC **(NG interview, 2021)**.

According to Asbjørn Emil Holmlund from Vækstfonden, it is difficult for VCs and business angels to understand what constitutes a profitable game for investors, which makes it difficult to reach them and establish a network of business angels that are specifically interested in this industry **(VF interview, 2021)**. It is not even certain that the successful entrepreneurs would have the necessary expertise in becoming business angels themselves, as it is very different running your own business while also investing in others **(TTG interview, 2021)**. In many ways, games are hit- and consumer-preference-driven businesses and the Danish growth fund, Vækstfonden, has recently expressed their interest in purely data-driven games, as the calculations of risk/reward are easier due to their business model of acquiring users and earning revenue through ads, rather

than other types of games, which are more hit- and trend-driven **(VF interview, 2021)**. And although it is good for the entire ecosystem when any studio attracts investment, it concerns Michael Flarup from Northplay. In his optics, it would be unfortunate if investment funds in Denmark would begin having preferences like data-driven game studios, as this would result in a less varied game product landscape **(NP interview, 2021)**. Vækstfonden is a large and complex institution and will likely not adapt to the needs of a single industry **(VF interview, 2021)**, but their current mode of operation is not compatible with the complexities of the industry, as described in the first section of this analysis. This is a shame, according to Sofie Læntver from Nordisk Games **(NG interview, 2021)**, as there are many examples of industry policies that avoid using the match-funding principle as seen in creative industries, among others Business Finland as elaborated on below **(Business Finland, 2021a)**. However, she also stresses that many Danish game developers are too focused on Danish support and funding, and that they should look to international funds, as this is much more indicative of the commercial nature of games that should have increasing interest in Denmark **(NG interview, 2021)**.

5.3.1.3 Educational policy

While this was not a central part of the conversations in the empirical data, Simon Løvind from the Danish Film Institute **(DFI interview, 2021)** brought up important points in terms of creating a holistic public policy for digital game development.

The main argument for introducing games as part of the educational policy is the strong Danish pedagogical tradition which permeates the educational system in the first place. We aim, as a nation, to make sure that our children have access to Danish produced content **(DFI interview, 2021)**. This tendency is historically based on the Grundtvigian principles of art and culture as drivers of a balanced society, where people have a sense of history and mastery of the Danish language. Denmark is a small country, and we are driven by a desire to preserve our traditions and culture **(Duelund, 2001)**. In Filmaftalen 2019-2023, for instance, an entire section is dedicated to explaining the changes in the media consumption of kids and how much of the support must be going towards the production of film and TV for kids, which in the current agreement is 35 mio. DKK **(Kulturministeriet, 2019)**. Danish public service providers, like DR, are also focusing their attention on as young as 1- 3 year old kids and the production of Danish content for these, teaching

things like hand-to-eye coordination and music **(DR, 2021)**. Simon Løvind explained that Spilordningen used to have a pool of funding for digital educational tools, of which games was an important part, under the Danish Ministry of Education, but that this is no longer active. It has been changed into a general pool which is no longer connected to games **(DFI interview, 2021)**. This reflects the difficulty of the game industry and its agencies in dealing with the volatility of Danish politics, which has not enjoyed the same straightforward path as, e.g., Sweden. It also underlines the lack of political interest in games; in fact, almost a political ignorance to digital possibilities, and a reluctance to innovate in processes, rather than products. This is also in line with the conclusion of Edquist et al. **(1993)**, that Denmark has a historical tendency to lag behind in innovations due to the political inconsistency.

As described before, 92% of Danish kids aged 1-15 have played games at some point in their lives, and most play every day. A more carefully planned inclusion of games into the educational system would not only tap into a trend that is happening and developing right now but would also allow for the schools and the governmental agencies to increase their public procurement of games in an educational context.

5.3.1.4 Innovation policy

The interviews make it clear that games should not only be seen as a simple children's product, but that the industry is pushing boundaries within entertainment, technology, and art **(VD interview, 2021; TTG interview, 2021; NGP interview, 2021)**. Games can therefore be innovated across all three elements, either at the same time or separately. Some game studios have developed new business models that are purely data-driven, in which the users are observed and measured to continuously improve the game, while others are driven by narratives, visuals, and gameplay experiences, among other factors **(VF interview, 2021; NG interview, 2021; NP interview, 2021)**. However, not all games are technology-driven products **(NG interview, 2021)**. Innovation within games can also happen in the foundational systems for games, like the game engines used to create games, the distribution systems where players can buy games, or the machines that are used to play games. The Danish company Unity, for example, became known for their development of one of the biggest game engines in the world **(DR, 2018)**. They started in

Denmark but were unable to attract Danish venture capital, so they moved to the US to grow their business, and are now operating all over their world **(VD interview, 2021)**.

This lack of venture capital for innovation in games in Denmark is, as described before, one of the biggest problems in the Danish game industry. Despite the focus on creative industries in Denmark, not a lot of money is being invested in what Jan Neiiendam calls *crea-tech* **(VD interview, 2021)**, which comes back to the challenge for the industry of belonging within public policy as a complex and combinative product. The national innovation fund, Innovationsfonden, supports a broad variety of firms and ideas, but the game developers rarely apply because their projects are not technology-based, according to Sofie Læntver from Nordisk Games, who is also evaluating applications for Innovationsfonden **(NG interview, 2021)**. However, she also points out that Innovationsfonden may not have the competencies to understand the market for games **(ibid.)** which, like other creative industries, is often subject to different economic principles and organizational practices than other, traditional businesses **(Caves, 2000; Patten 2016)**. It is possible that Denmark should look to Business Finland (formerly Tekes), the Finnish governmental organization responsible for trade, innovation, and tourism growth, and its specialized foundation, Entertainment Finland **(Business Finland, 2021b)**. The organization has been responsible for the growth of many of the largest game companies in Finland and has historically shown interest in growing the game industry since the mid-nineties **(Sotamaa et al., 2017; Science Business, 2015)**.

This is a perfect example of Etzkowitz' **(2003)** model where the government acts as VC to boost an industry, when the industry itself is too young to attract any large private VCs. The Finnish model also works without the much-discussed matchmaking principle, wherein the companies are required to bring an investor to the table before Vækstfonden will double this investment **(VF interview, 2021)**. The government should, like in Finland, act as VC from the start, as to take the first steps in attracting investors, and thereby showing that they are supporting the gaming industry **(NG interview, 2021)**. The current lack of private investors in the industry is a major missing element in the Danish entrepreneurship ecosystem **(Isenberg, 2011)** which is connected to a missing understanding of games and, possibly, the lack of successful entrepreneurs in the ecosystem - someone who wants to give back by (re-)investing **(BDG interview, 2021)**.

5.3.1.5 A holistic view on games within policy

As briefly mentioned in Section 5.1, the complexity of games makes it difficult to ascertain how games as a cultural, technological, and educational product should be managed within the Danish public policy. Appendix 7 visualizes the holistic relationship between video game development and how the government must support the processes within the industry. However, as Sofie from Nordisk Games underlines, it is necessary for the politicians to act soon, otherwise Denmark will not reap the economic benefits of a globally growing industry **(NG interview, 20201)**. It is essential that the fragmentation of the current policies is mended, and that new synergies between the funding, public procurement, and the cultural relationships are established **(DFI interview, 2021)**.

A new space for public governance, for the game industry as well as the rest of the creative industries, can be found in Pratt's **(2005)** matrix, located in Appendix 8, which shows that there is a large area of heterarchical governance which has yet to be explored. Currently, Danish policy lies within sectoral governance, which Pratt also points out as an interesting area, but still very market-oriented, which may not fit well with how the creative industries operate. The requirements for movement towards heterarchical governance are completely in line with the needs of the game industry, as described in this analysis: the policymakers must develop a stronger and richer understanding of the organizations and their production, while also focusing on innovation, network, and training **(Pratt, 2005)**.

This matrix furthermore shows that there is space for the differentiation of cultural industries into the various cultural discourses. This means that the same policy which cultivates, for example, traditional arts and performance may not be appropriate when it comes to highly combinatorial industries, like the game industry. The relationship between "pure" and "applied" arts can hence be seen to be more complex and must be considered when discussing the expansive role of creative industries in the Danish national branding. This is not an easy task and must be further studied to explore how Danish public policy can innovate themselves to avoid genericism within industries which operate under different circumstances than other sectors **(Pratt, 2005)**.

5.3.2 Centralization of policies and its consequences

Besides the lack of synergy in the current public policy, Danish policymaking has undergone a process of centralization, both within cultural, industrial, and innovation policies. This has had consequences for the Danish game industry: before, a series of specialized initiatives and funding was accessible, but these have been concluded or closed during the centralization process. The game industry is now politically managed under the creative industries as a whole, making it difficult to discern the different challenges that the individual industries face.

5.3.2.1 Clustering of creative industries

The Danish focus on creative industries has developed from being focused on the individual industry to complex cross-industry collaborations and agencies. This can be seen in the development of Computerspilzonen, which was established to map and observe the game development industry and later rebuilt into Interactive Denmark, expanding the focus to both games, XR, and other interactive content **(VD interview, 2021)**. In 2019, the Danish Business Promotion Agency (Erhvervsfremmestyrelsen) consolidated several clusters, including Interactive Denmark, into Vision Denmark as part of a larger consolidation process, thereby creating a new industry alliance within the digital visual industries: film, TV, advertising, animation, games, XR and interactive media **(Erhvervsfremmestyrelsen, 2019)**. This follows a general political trend: "promoting local competitive advantage; and using the creative sector as a region or city's leading high-growth sector" **(Pratt, 2004, pg. 4)**, which is also stated as one of the goals for the consolidation of these clusters **(Erhvervsfremmestyrelsen, 2019)**. Furthermore, a consortium, Creative Denmark, was founded as a public-private partnership to promote the Danish creative industries, on the recommendation of the Growth Team for Creative Industries (as will be described later) **(Creative Denmark, 2021; Erhvervsministeriet, 2019)**.

This rapidly emerging cluster policy, which has become standard within the EU, and thus within Denmark, can be criticized on different points. Primarily, as previously pointed out, the production chains for the industries have not been properly mapped, making it very difficult for policymakers to predict the influences of changes within the regulatory framework **(Pratt, 2004)**. And while the

industries have been continuously mapped and observed through the work of Interactive Denmark/Vision Denmark **(VD interview, 2021)**, it is difficult to discern the many processes and business models of the industry with data that only includes firm size, turnover, and employment **(Pratt, 2004)**. These issues are reflected in the fact that despite growth in overall turnover and number of firms, the industry consists of many small firms, with little to no turnover, and a couple of larger firms, which are responsible for most of the turnover **(Producentforeningen, 2018)**. By clustering the audio-visual industries into one, it may give more opportunities to understand the cross-media possibilities, like film and game co-productions **(VD interview, 2021)**, but it also allows for a greater risk of ignoring the individual needs and challenges of each industry. When a generic public policy is created for film, games, TV, and interactive media, already existing power relations and preferences should not be ignored **(ibid.)**, but with clustering, these are easily obfuscated in the desire for promoting the Danish creative industries as a whole.

From the above, it can be seen that less specialized interest is taken in games as an industry, as it is now clustered together with a variety of older industries, some of which have a much stronger connection to public policymakers, like film and TV. Despite the obvious benefits that this may have, there is a risk that it becomes harder to measure and evaluate the individual industry, and to make sure that the policymakers will look at each industry equally unbiased. The idea is not to fight the development of these clusters, but rather to make sure that the game industry can be properly mapped out in their production chains, so that weaknesses and consequences can be properly identified and addressed.

5.3.2.2 Simplification of the promotion of trade and innovation

A further centralization has progressed within the agencies for promotion of trade and innovation. Four innovation environments meant to support knowledge-based firms with soft money were operating from 2006-2018. One of them became a supporting pillar for the game industry, as Allan Rasmussen from CAPNOVA started to take an interest in games as an investment **(CAP interview, 2021)**. He has single-handedly overseen the investment of DKK 125 mio. in 50 game companies, although it was unusual for a government agency like CAPNOVA to focus on a single industry **(ibid.)**. CAPNOVA and the other innovation environments were closed as a result of trying to simplify the system for promotion of trade (erhvervsfremmesystemet) **(Uddannelses- og**

Forskningsministeriet, 2020). As described before, Allan Rasmussen's departure from the ecosystem is an example of negative repercussions stemming from the removal of a single, passionate individual. The funding which these innovation environments injected into the game industry was not possible to recreate in another, similar version, as it was decided that Vækstfonden and Innovationsfonden were to take over the seed funding of creative, high risk industries **(VF interview, 2021; Regeringen, 2018)**. As a part of a larger move towards simplification of the Danish Innovation System in 2018, the state has dismantled several individual programs, including Fornyelsesfonden/Markedsmodningsfonden which concluded in 2019, and transferred all activities to Erhvervsfremmesystemet and Innovationsfonden **(Regeringen, 2018)**.

There are very divided opinions on whether Vækstfonden and Innovationsfonden have built upon the already existing system, namely the task which was symbolically given to them when CAPNOVA closed, or whether it is even possible to return to a more specialized financial support. While there are several game developers who have received funding from Vækstfonden, including Bedtime Digital Games **(VF interview, 2021; BDG interview, 2021)**, and there are at least two people within the fund who has an interest in the game industry, it is unlikely that Vækstfonden will create a specialized fund like CAPNOVA **(VF interview, 2021)**. This is due to the already established systems they have in place, Early Engagement (a convertible loan for entrepreneurs) and Business Angel matching **(ibid.)**. However, with the lack of business angels in Denmark interested in the Danish game industry **(IL interview, 2021; VD interview, 2021)**, and Vækstfonden's nascent preference towards data-driven game studios **(VF interview, 2021)**, Vækstfonden's financing options pass over a variety of Danish game companies that do not follow the economic profiles of the usual tech- or software startups. Thus, we have returned to the complexities of the game industry, which do not necessarily follow the beaten path of traditional entrepreneurship. Sofie Læntver from Nordisk Games also underlines that, seeing as not all games are technology-based, Innovationsfonden is not even relevant for most of the game studios **(NG interview, 2021)**. Furthermore, with the lack of business acumen in the game industry, as previously established in the analysis, the step from applying at a specialized fund to applying at a much larger institution, as Vækstfonden, may be a daunting challenge for most game studios, if not most Danish firms **(VD interview, 2021)**.

5.3.3 Many recommendations and little interest

As a consequence of the centralization process described above, it is possible to dive into the different policy initiatives and expert recommendations over time and figure out how politicians often mention games as a high growth potential industry, and as part of the promotion of creative industries, but the many reports have rendered little results for the game industry. Due to space constraints, just one important example will be provided here, but games have, until now, been mentioned as a potential high growth sector in all the reports from the Growth Team for Creative industries.

5.3.3.1 An example: The Growth Team for the creative industries

In 2012, three ministries (Culture, Industry, and Trade Council) created what they called Growth Team for Creative Industries (Vækstteamet for Kreative Erhverv), a group of industry experts tasked with giving the government recommendations on how to strengthen the growth of creative industries like music, gaming, fashion, architecture, and film **(Erhvervsministeriet, 2012)**. This group can be understood as an attempt at what Isenberg **(2011)** would describe as a temporary taskforce with the responsibility to enhance the (creative) entrepreneurship ecosystem, although this is a permanent, rotational team without any mandate or resources to affect change outside of their recommendations. This is almost the opposite of how Isenberg recommended such an initiative, as the government still retains the power to choose their response to the recommendations, rather than allowing the taskforce the actual executive powers of their judgements **(ibid.)**. Despite the collaboration between the industries and the government, this initiative reflects the distance between the policies and the needs of the industry, which Christian Nyhus from Ideas Lab points out. These policies, both in Denmark and in Europe, sound very good on paper, but are challenging; the funding allocated to the broad creative industries is far too little and, in the end, much of the funding rarely reaches the intended companies **(IL interview, 2021)**.

The reports of the growth team also highlight some of the most common challenges facing the Danish creative industries, as discussed in this paper: lack of funding, lack of connection between education and industry, difficulties in acquiring international talent, scarcity of public-private

partnerships, and too short and limited political initiatives **(Erhvervsministeriet, 2012; Erhvervsministeriet, 2018)**. Development of digital games are highlighted as a high growth potential industry in all reports and has been pointed out as an industry which in particular is suffering due to the lack of risk capital, access to funding, and loss of talent seeking away from Denmark and into Sweden or Finland, which has a better ecosystem **(Erhvervsministeriet, 2018; Erhvervsministeriet, 2019)**. While it is understood that these are recommendations made to the government, and that they retain the right to follow these or not, it is notable that the state has chosen to focus on the centralized promotion of all Danish creative industries as a whole. Rather than addressing the needs of a high growth potential industry like games, they established the aforementioned marketing consortium Creative Denmark and a Laboratory of Creativity and Innovation in Denmark, a cross-media innovation environment for the creative industries **(Erhvervsministeriet, 2019)**. While this may be a long-term strategy of attracting international funding to Denmark and the creative industries, including games, it is likely that an international injection of funding will be a temporary measure at best without a functioning national ecosystem. To create a good political ecosystem for the creative industries as a cluster, it is necessary to understand the individual industry and its challenges **(Pratt, 2004)**.

The short and limited political initiatives are also worth noting, as this is something which has caused incontinuity of the political interest in the industry **(DFI interview, 2021; IL interview, 2021; GHD interview, 2021; Feld, 2012)**. In 2011, the Ministry of Industry, Business and Financial Affairs (MIBF), together with the Ministry of Culture, published a report on the attraction of capital and possibilities of commercial potential in the Danish game industry. They characterize the industry as being too immature for investment, as the size is too small and there were little to no commercial successes. The table in Appendix 9 describe the initiatives aimed at strengthening the position of the industry. Added to this table is whether it still exists or not, based on my research. It is seen that only three out of the original seven initiatives are still active, and one of these is an EU program, which is not operating specifically in Denmark.

While political programs generally operate within a limited time span, it is evident that very few specialized initiatives have been promoted since this last evaluation in 2011, possibly as a result of the centralization process which has simplified Danish policymaking and its focus on the overall

creative industries instead of each individual industry. Another reason could be the difficulty of seeing a holistic picture of what has happened politically since 2005, as the political cycles are quite short, and the entrepreneurs work with long-term strategies **(Feld, 2012)**. In line with this, it should be noted that many of the reports have been surprisingly difficult to find, which highlights the lack of transparency of both governments and interest organizations alike: the demanding task of continuous documentation, dissemination, and organization. Many of the reports on official sites had broken links, referred to other reports which did not exist on the same official site, or only existed on external, unofficial sites.

Lastly, it is worth examining the earlier recommendations that were given based on the MIBF's report as many of these can be traced to the recommendations of this paper. This underlines the lack of political interest in continuing programs long enough for them to have any effect. Computerspilzonen outlined nine initiatives as possible relief to the challenges met by the Danish game industry **(Computerspilzonen, 2012)**.

The first recommendation was to build a national knowledge center with the purpose of mapping and marketing the industry competences, further build on the network that Computerspilzonen has built, and lead the professionalization and business development of the industry **(ibid.)**. This approach is comparable to the production system mapping as described by Pratt **(2004)** and would support the knowledge dissemination in the industry and among policymakers and encourage research in management and industry relations.

Secondly, they recommended the establishment of a matching fund with DKK 100 mio, in which every private investment is matched with the same amount from the matching fund **(Computerspilzonen, 2012)**. While the match funding program can be an efficient tool, the game industry has yet to attract an appropriate amount of angel investors to make the program viable **(CAP interview, 2021; IL interview, 2021)**. Next, they suggested establishing an Accelerator-program, which should offer a three-month program including consulting and a small finance round, which results in the development of a prototype. Related to this, a mentoring program with national and international contributors was endorsed, as to increase the professionalization of the sector **(Computerspilzonen, 2012)**. The need for incubator- or accelerator programs, as well as

general mentoring, has been underlined by almost all interviewees **(NG interview, TTG interview, VD interview, 2021)**, and has been widely advocated for, particularly in the shape of a specialized incubator **(Naz et al., 2020)** or as a corporate incubator **(Kötting, 2019)**. However, as Simon from DFI underlines, it must be part of a long-term strategy, otherwise the industry will not experience the kind of synergy created by well-balanced policies, funding options, and incubators **(DFI interview, 2021)**. This is furthermore in line with the literature on entrepreneurship ecosystems, where these synergistic relationships are the driver of the growth **(Isenberg, 2011)**.

The fifth recommendation is increased attention on attracting foreign labor and international game companies to establish themselves in Denmark, which includes establishing tax incentives and easing social mobilization through access to schools and more. Although this is not something which has been widely discussed in this thesis, tax incentives are something which has been pointed out earlier by Christian from Ideas Lab **(IL interview, 2021)**, and which is widely used in France and the UK to stimulate the video game industry. However, he also argued that there may not be much use for tax incentives for smaller companies **(ibid.)**. Underlined in the report is also the role of tax credits, which could play a role for the Danish game studios taking a greater role in education and research, which previously had been an issue due to the risk of no revenue in the first years of existence. This is a part of a larger discussion, which is outside the scope of this thesis.

They also recommend that Spilordningen should increase its funds from 5 to 10 mio. DKK yearly, which is the level of support today. The eighth recommendation is to build a closer relationship with the investors by, among other things, arranging tours within the studios and creating a knowledge platform for the news and tendencies within the industry. This could also be supported by the dissemination of knowledge as a result of the industry mapping described earlier **(Pratt, 2004)**. Lastly, it is suggested that a stronger research- and education foundation is founded, which not only can supplement the already existing education, but also be the center of the knowledge exchange between university and industry **(Computerspilzonen, 2012)**.

Seeing as the leader of Computerspilzonen in 2012, Jan Neiiendam, also heads up the current industry cluster, Vision Denmark **(VD interview, 2021)**, it is obvious that the challenges and political history of the game industry is already known and being processed. To holistically look at the Danish game industry ecosystem, investigating the opportunities and threats which have been presented in this study, it is necessary to take steps to ensure that the initiatives proposed are part of a long-term strategy and not simply recommended and then forgotten. According to Isenberg **(2011)**, a task force should be established, which would be a temporary private-public organization with the goal of finding synergies and solutions to ensure the self-sustainability of the ecosystem. The important part of this is the power granted to this organization - it is not simply something which can be ignored by the government. This is also in line with Etzkowitz' focus on the balance between top-down and bottom-up initiatives, in the sense that the industry itself must also be engaged in the formation of the policy, otherwise it may not reflect the reality of the industry conditions or needs **(2003)**.

6.0 Conclusion

The purpose of this thesis has been to understand how policy intervention can support the Danish game developer ecosystem. In the process of answering this, three other sub-questions have been examined, namely how the Danish game industry differs from traditional entrepreneurship; what the current challenges are to the industry, and how these can be alleviated through policy; and how the Danish game industry fits into public policy and how policy processes have affected the game industry. In Appendix 10, a table overview of the elements of the ecosystem based on Isenberg **(2011)** can be seen, in addition to the issues that this analysis has identified within these elements.

6.1 The complexity of industry and product

The first section of the analysis dealt with mapping out the complexities of the game industry. Games, as part of the creative industries, are subject to a series of economic principles and dichotomies characterizing cultural products. As well as being of infinite variety, games must still balance innovation and familiarity within their already many moving parts. However, even with the best planning of a game, it is still impossible to predict whether the audiences will like the

result, as their preferences are largely unknown, also to themselves, and are influenced greatly by exogenous forces like trends, media, and their personal network. That said, games have a very large audience in general - in Denmark alone, most people have gamed before, and around half of the Danish population are playing games daily. The industry itself is almost as diverse as the games that are produced, as a consequence of the many different professional aspects of a game - programming, graphics, game design, to name a few - and these people have different levels of skills, ambition and professional mentalities. Furthermore, the leaders and entrepreneurs within the studios both show the characteristics of traditional entrepreneurs, as well as characteristics of creators. While these characteristics overlap, there are indications that creative entrepreneurs are not as driven by venture and business as they are driven by their own vision and its manifestation. Lastly, the game developer community is very strong, but their insufficient professional organization puts them at a disadvantageous position for political lobbying which, together with work of their interest organizations, would make it easier to be understood by politicians and the press.

6.1.1 Political implication in the industry complexity

The multiplicity of disciplines necessary for games to be created, and the management methods that they utilize to coordinate their productions, makes the game industry an elusive size to the public and the policymakers alike. While the government in Denmark is very open about its focus on creative industries, and the production of digital games as a part of this, a lack of understanding of the processes and products leads to the needs of the industry being inadvertently ignored. Furthermore, as this growing industry is very young and its size, employees, and firms have only been tracked since 2005, there has as of yet been little documentation about these processes. To alleviate some of the lack of understanding within this complex industry, this thesis proposes that the process of creative production in the game industry should be outlined continuously within a framework of the industry, the interest organizations, and the policymakers. It is thus also the responsibility of the politicians to take the time to be aware of the system and its elements, and its current weaknesses and strengths.

6.2 Industry challenges: business development

Section 5.2 of the analysis investigated the biggest challenges within the Danish game industry, which are the difficulties in establishing and maintaining companies in Denmark, and lack of business acumen, which affects not only game developers, but all entrepreneurs. Throughout the last couple of years, Denmark has made it more difficult to start a new company, which can be seen as simultaneously valuable and detrimental. Danish game companies tend to be small and thus do not create as much growth as more mature companies and, furthermore, many game developers are dependent on government subsidies, making them less productive than entrepreneurs entirely dependent on market forces. For these reasons alone, it may be appropriate for the Danish government to encourage active entrepreneurship training and mentoring during and after education. Finally, seeing as the game ecosystem in Denmark is not mature enough to sustain the inflow of talent and skilled workers, this results in workers searching for international opportunities.

The difficulties in founding and maintaining game studios are further increased by the Death Valley and fragmentation in the current Danish funding system. There is little funding for pre-seed and early-stage firms, and the centralization process resulted in a specialized fund, CAPNOVA, being absorbed into a more complex and general innovation foundation, Vækstfonden. Due to the complexities of the industry and its products, there are very few business angels interested in the industry, making Vækstfonden's match funding program difficult to operate, and the lack of business development skills makes it difficult for the industry to attract international and national VC. The current ecosystem in Denmark is shown to be in a middle position between the ones in Norway and Finland, where the government has chosen to focus on games in a much more specialized way - in Norway, games are seen as a highly cultural product, which is supported to a much greater degree by subsidies, while in Finland, they see games exclusively as a business. However, this borderline position has only caused the Danish game industry to fall into the cracks between policies and varying agendas. This has resulted in the lack of specific incubators, which would make the industry more competent at business development, and a muddled cultural policy, which currently has games as a cultural product secondary to film and far less politically interesting.

6.2.1 Political support for a more business-oriented industry

The greatest challenge that the industry faces today is its lack of interest in business development, which should be alleviated through the establishment of permanent or long-term incubators and mentoring programs. While a program like SOLID had success in educating and consulting the current medium-sized companies, the discontinuation of this accelerator was a great loss for the industry. New incubators could either be separate industry-specific entities or integrated in corporate environments to support the self-sustainability of the ecosystem by enabling the larger companies to give back. Alternatively, it would also be conducive to have a specialized consultant in the public business centers with industry knowledge, able to understand the companies and their challenges. Furthermore, education should present a more balanced view of entrepreneurship with an increased focus on different, negative aspects alongside the existing focus on success stories. This would enable students directly from university to gain more realistic insight into how and when to establish their company.

6.3 Political processes and lack of interest

Section 5.3 of the analysis investigated the existing policy processes and their relation to the game industry, as well as what seemed to be political disinterest in the games outside of being part of the creative industries. The first part of this section delved into cultural, innovation, education, and industrial policy in the search for a place within these processes where games belong - and how synergies could be attained. The reasoning behind this approach was influenced by the political rejection of the game industry as anything other than a cultural product.

Within cultural policy and its subsidy system, games are contained within Filmaftalen, which outlines the political support for the development of all types of film (kids, fiction, documentary, etc.), advancement of talent, and the production of TV. From its inclusion in 2007 to 2021, the subsidy has grown from DKK 3 mio to DKK 10 mio yearly, but despite games having progressed as an industry with higher export revenue than film and TV together, there has been little measurement or evaluation of the game industry within Spilordningen. This is reflected in the single paragraph included in the agreement to describe games, which has barely changed since

2007. Furthermore, while Filmaftalen supports the production of both artistic and commercial films, the game projects supported are required to not be too commercially focused. Due to the lack of pre-seed investment, described before, there is a risk that the Danish game productions become culturally skewed, and thus less commercially focused, as Spilordningen remains the only place to apply for subsidies. Lastly, there is very little connection between Spilordningen and any kind of educational policy, which could include games as a pedagogical tool in schools, much like film is today. Furthermore, the application process for Spilordningen is completely different from Vækstfonden or Innovationsfonden, which results in companies which often simply specialize in one kind of project and application. The current funding options do not encourage a balance between innovating in culture and tech, but rather culture or tech.

The innovation and growth policies are also operating at different ends of the spectrum; Innovationsfonden is soft money, which does not need to be paid back, and Vækstfonden is hard money, a kind of investment which the fund will eventually exit and need to be paid back. Neither government funds have the necessary industry knowledge and competences to evaluate what kind of technology or company may be successful in the future, as there is little communication or connection between these funds and the industry. Furthermore, due to the lack of business development skills, many studios have difficulties in establishing good relationships with investors and business angels. The uncertainty around changing preferences and success within games as a creative product also pushes Vækstfonden into having preferences in the types of games they support, which can lead to a less varied Danish offering. Lastly, the match funding program provided by Vækstfonden has little effect, as there are very few business angels interested in games.

Within industrial policy, only a single municipality (Norddjurs Municipality) has made the commitment to focus on games and has thus understood the potential of their own little ecosystem, within the larger Danish national game ecosystem. They already have several levels of game-related education, an incubator and a game hub, events to bring people together in various stages of their entrepreneurship journey, and international partnerships to support the globalisation of their students and incubated firms. Despite the interest in creative industries in general, there are very few initiatives to understand and act on the individual needs and challenges of different

industries; it is therefore also incongruous for the government to push branding of its passion for CCIs, while not acting on the challenges that are presented in these industries.

This shift in focus from the specific industry to the broad CCIs is also evident in the many different political recommendations and reports generated over the years. From the first SWOT analysis in 2005 to the repeated inclusion of games as a high growth potential industry in the creative industries reports many of the same challenges have been restated, as described in the introduction: lack of investors, lack of political interest, lack of business acumen. However, the government has simplified its approach to these industries by clustering, believing it is better to support all the creative industries at once - through marketization of the CCI as a whole, through one big injection of financial support for the Danish CCI, through the Growth team for Creative Industries looking at all the industries at once - but the industries within the CCI are vastly different and are facing very disparate challenges.

It is recommended to establish an agreement for games, separate from Filmaftalen, which will allow for a much broader perspective for games, meaning specialized funds for games with a focus on commercialization, culture, and kids. This would encourage production of a much more comprehensive variety of games, instead of focusing on a narrow cultural perspective which doesn't allow for commercial interests. Furthermore, it is essential that this policy is set up with clear goals and evaluations by which it is modified every four years, like Filmaftalen. This will ensure that even with the changing political landscape of Denmark, these policies will still be evaluated by well-considered specifications.

It is also recommended that a strategy for attracting business angels is set in place, including documenting the production processes to ease the difficulty of understanding good practice within the game industry. Furthermore, taking inspiration from Finland, it is recommended that the government will set up a VC fund with at least DKK 20 mio to continue the work of CAPNOVA. This should not be a matching fund, but a seed-VC fund with special and continuously changing experts connected, to ensure the quality and variety of the chosen studios.

Lastly, it should be considered, based on this analysis, to set up an industry-specific task force with all the necessary backing and decision-making power from the policymakers and the industry, the goal of which is to delve deeper into the game industry and its ecosystem elements to further the understanding of the weak points, and to clarify the options possible for policy and industry to create stronger bonds.

8.0 Appendixes

Appendix 1 Danish game industry overview 2009-2018

The numbers correspond to the following categories, due to lack of space in the table.

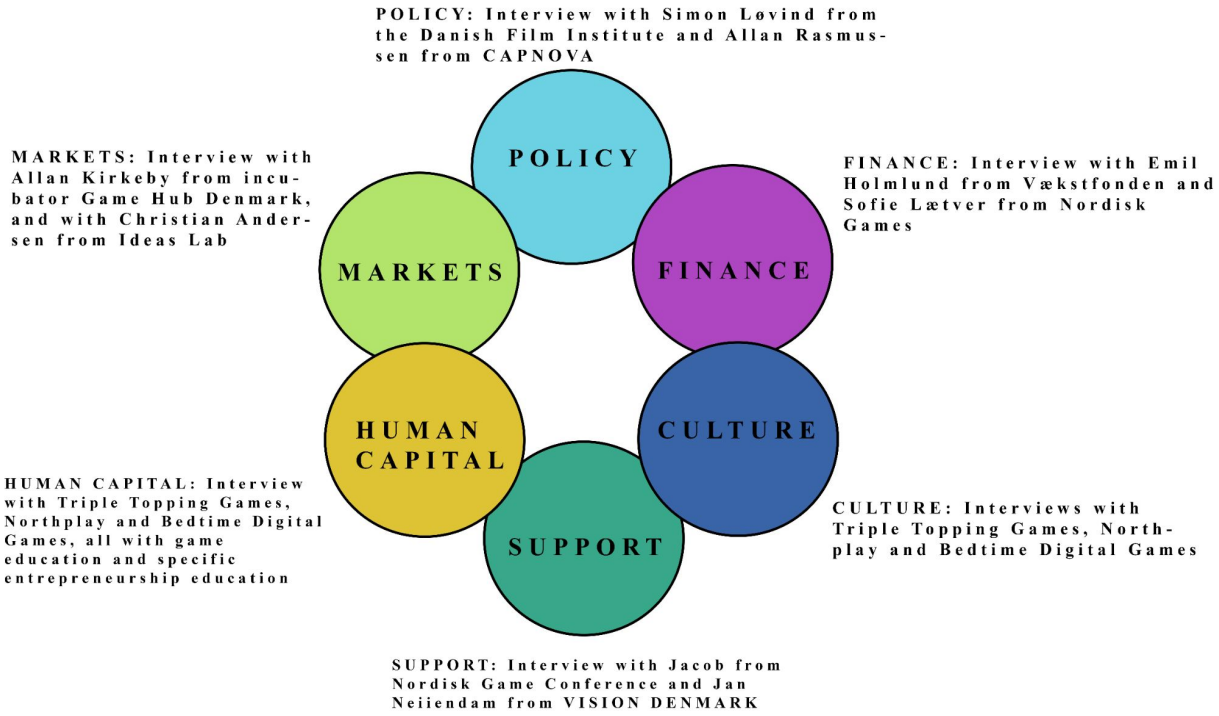
1. Number of companies
2. Number of employees
3. Turnover (in mio. DKK)
4. Export (in mio. DKK)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	% inc.
1.	72	103	125	145	139	190	151	162	186	159	142	97,2
2.	552	578	615	728	721	735	770	804	1.009	955	659	19,3
3.	376	460	429	598	823	1.116	1.161	1.025	916	1.070	1.319	250,7
4.	252	339	239	415	668	747	744	649	552	648	924	266,6

Sources: (Producentforeningen, 2009; Producentforeningen, 2010; Producentforeningen, 2014; Producentforeningen, 2015; Producentforeningen, 2018)[3]

[3] Some discrepancies within the reports occur due to changing methods of data collection.

Appendix 2 The interviewees within the Entrepreneurship Ecosystem



Source: Isenberg (2011), own additions

Appendix 3 Sample of coding process

Initial coding (sample of codes, not full list)	**Axial coding**	**Overall theme (in the thesis)**
Categorization of games Cluster policy Commercialization Company profile Complementary industries Cultural capital Danish content productions Danish audiences Missing knowledge Policy and industry pace Political ignorance Resistance Policy interest in games Success stories Systemic challenges Types of game companies Uncertainty around games Unintended consequences	Understanding the phenomenon of games	Complexity of industry and product
Administrative costs Company profile Company scaling Experience in the industry Game company sizes Indie studios identity Industry diversity Industry ignorance Interns Job creation Learning on the job Multidisciplinarity of games Labor associations Network employment Outsourcing work Community of sharing	Diversity of competencies	Complexity of industry and product

Alternative work flows Balancing act Bootstrapping Creative entrepreneurs Death valley Family investor Global competition Hit or miss Incubators Investment requirements Kickstarter funds Loans Market forces Missing experience Entrepreneurship conditions Motley financing Mentoring Learning on the job Secondary splinters Serial entrepreneurship Subsidy entrepreneur Slow growth Børsnotering	Industry weaknesses (business management)	Challenges in the game development industry: missing business acumen
Closing CAPNOVA Business angels Film and Games connection Cultural policy Fragmented policy Interactive Danmark / VISION investment limitations Knowledge documentation Knowledge liason Labor market issues New national identity Industry globalization Continuity of policies Policy and industry pace Fractured political ecosystem Policy measurement Unintended consequences Top-Down policy	Policy interest in games (lack of)	Policy processes and mutual lack of interest

Access to funding Centralisation Cluster policy Complementary industries Computerspilzonen Crea-tech Cross platform production Filmaftalen Fragmented policy Experience in the industry Game industry characteristics Game Industry policy Global competition Incubator partnerships Knowledge documentation Mapping the industry Policy Industry alliance Policy results Unintended consequences	Cluster policy development & results	Policy processes and mutual lack of interest

Appendix 4 Example of Interview Consent Agreement

Interview Agreement

I would like to discuss this issue of *'How can state intervention foster a sustainable ecosystem in the Danish Video Game industry?'* with *name*, *title/position* at *company*.

The interview will be conducted online, *date* and *time*, on *platform*.

At the interview there will be one interviewer. Furthermore, the interview will be audio recorded; all sensitive information will be kept confidential, unless asked otherwise. All data collected in this interview will be used to further the research of my Master thesis from Copenhagen Business School – Management of Creative Business Processes.

I have sent the questions along this agreement, so that you may be fully informed of what I intend to ask.

I confirm that I have read and understood the research project information sheet for the 'How are the Danish Game developers organizing themselves culturally and financially in the current political support system, and why?' and have had any questions answered to my satisfaction.

- I understand that my participation in the study is entirely voluntary.
- I agree to take part in the study as described in the information sheet.
- I agree with the interview session being recorded.
- I agree that quotations from the interview may be used in publications.

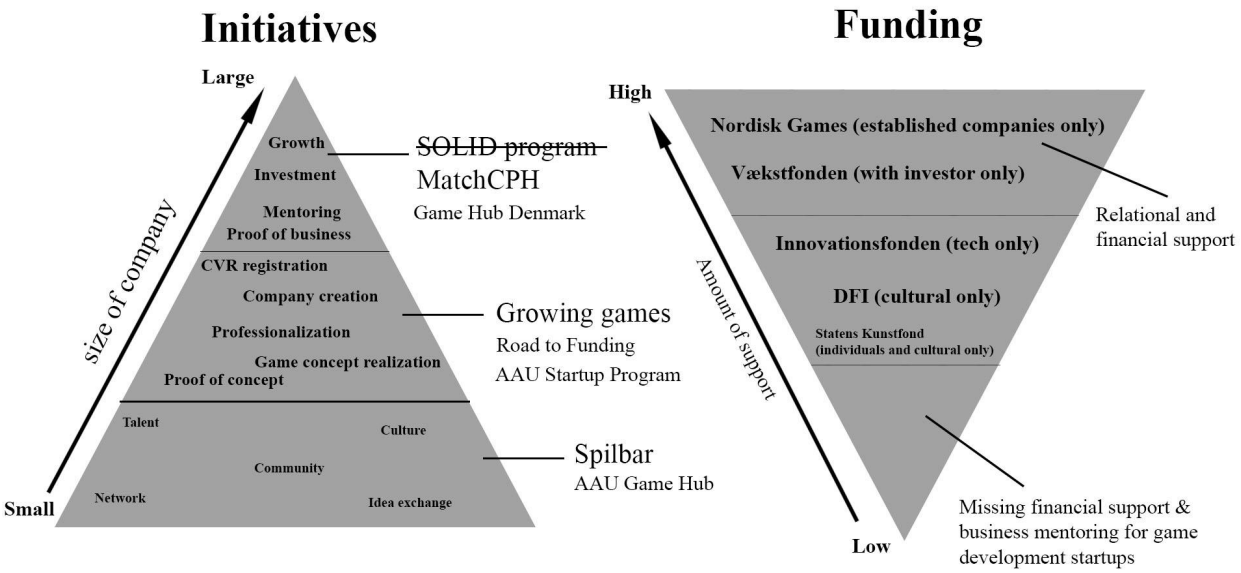
Interviewee's name
Name

Signature: _____ Date: _____

Researcher's name:
Helena Sokol

Signature:_____ Date: _____

Appendix 5 Size of company in relation to initiatives and funding



Source: Author's own illustration

Appendix 6 Game industry profiles by country

Source: Baltic Game Industry (2019), updated by author

6.1 Denmark

Games as a cultural product				R&D - technological innovation in/with games			
Grants	**Loans**	**Equity**	**Other**	**Grants**	**Loans**	**Equity**	**Other**
1	0	0	0	1	0	0	0
Support/investment for/in startups and SMEs				**Talent development**			
Grants	**Loans**	**Equity**	**Other**	**Grants**	**Loans**	**Equity**	**Other**
0	1	1	0	1	0	0	0

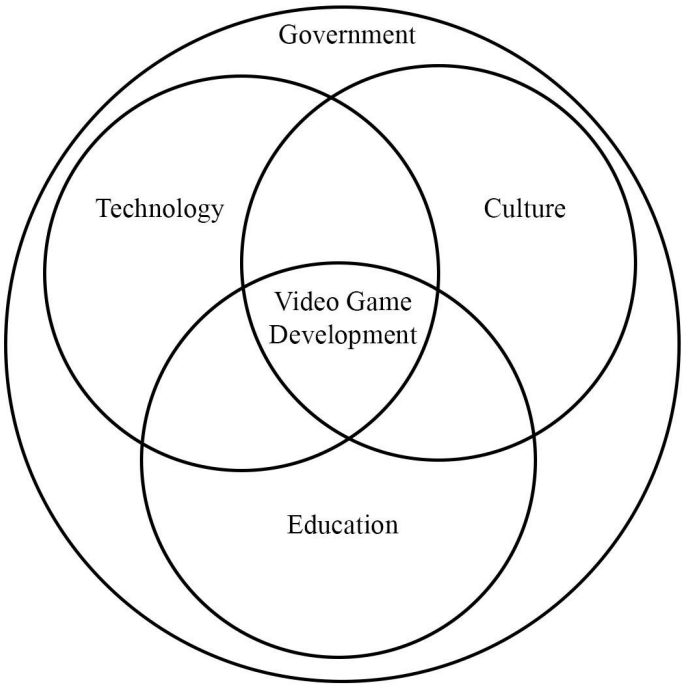
6.2 Finland

Games as a cultural product				R&D - technological innovation in/with games			
Grants	**Loans**	**Equity**	**Other**	**Grants**	**Loans**	**Equity**	**Other**
1	0	0	0	2	1	0	0
Support/investment for/in startups and SMEs				**Talent development**			
Grants	**Loans**	**Equity**	**Other**	**Grants**	**Loans**	**Equity**	**Other**
4	2	4	1	0	0	0	0

6.3 Sweden

Games as a cultural product				R&D - technological innovation in/with games			
Grants	**Loans**	**Equity**	**Other**	**Grants**	**Loans**	**Equity**	**Other**
0	0	0	0	0	0	0	0
Support/investment for/in startups and SMEs				**Talent development**			
Grants	**Loans**	**Equity**	**Other**	**Grants**	**Loans**	**Equity**	**Other**
1	1	4	0	0	0	0	0

Appendix 7 A holistic view of policy elements and game development



Technology:
The development of new software, hardware and tools for the use of production and distribution of games.

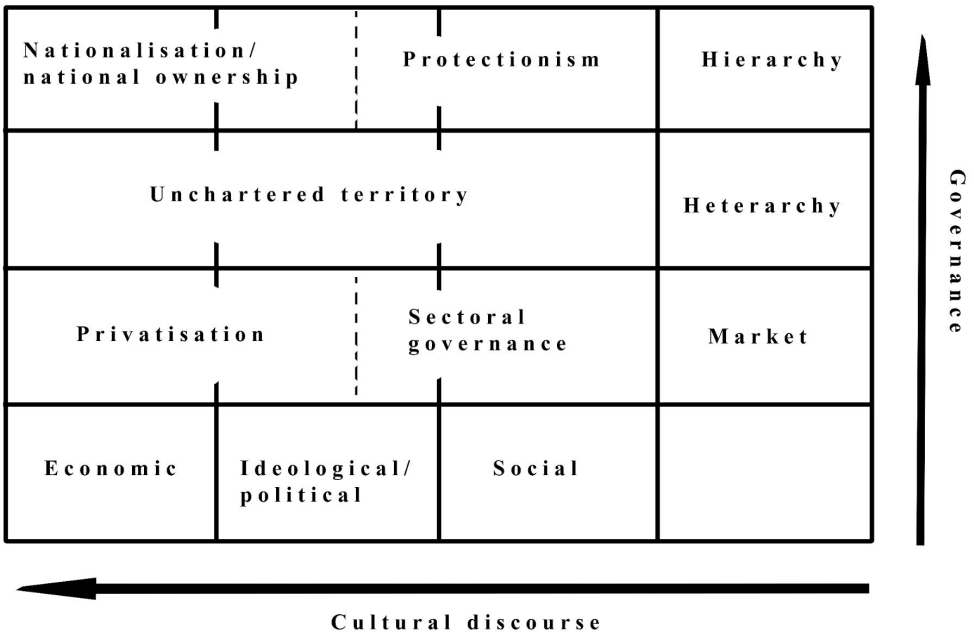
Culture:
The preservation and exploration of art, literature and cross-disciplinary activities within games as a medium, and the dissemination of a national identity into a global market.

Education:
The advancement of games as new educational tools for schools and at-home teaching, and the examination of games as an innovative new pedagogical mechanism.

Government:
How a coordinative political effort within the three areas can lead to increased economic growth.

Source: own research

Appendix 8 Governance/cultural discourse matrix



Source: **Pratt (2005)**

Appendix 9 Initiatives and their current state of operation

Initiatives aimed at strengthening the industry	**Current state of operation**
Computerspilzonen	Encompassed by Vision Denmark
Spilordningen, managed by the Danish Film Institute	Still active today
BornCreative, a program under the Trade Council offering 25 hours of free, specialized counselling in international trade and export	No longer offered
Bretteville, a Business House for digital producers in Aalborg, aimed at business development, matchmaking and more for creative industries in Northern Jutland	Closed down
Copenhagen Entertainment, aiming at developing a growth strategy for the creative industries in Copenhagen	Concluded
Nordisk Computerspilsprogram, a funding program for talent development in the game industry initiated by Nordisk Ministerråd in 2006	Closed down in 2015
EU Media Program, which is outside of the Danish policymaking for the game industry	Offers their own separate funding program for computer games for all of EU

Source: **(Erhvervsministeriet, 2011)**, own research.

Appendix 10 An overview of the Danish game industry ecosystem

Policy	**Government:** ● Regulatory framework & venture-friendly legislation ○ Difficult to start and maintain entrepreneurial activity in DK ○ Investor-hostile environment ● Tax benefits and incentives ○ Not used in Denmark, not existing for small businesses ● Financial support for R&D ○ Vækstfonden and Innovationsfonden are the only current options, not connected to other policy ● Political institutions ○ Currently being centralized, giving less focus on the needs of the individual industry
Finance	**Financial Capital:** ● Angel investors ○ No interest in games from Danish angels due to lack of understanding ● Zero-stage venture capital ○ No VC for crea-tech in DK ○ Innovationsfonden supports only tech solutions. ● Venture Capital funding ○ 17 mio. DKK for extra risky industries given to Vækstfonden, but little is seen in the game industry ● Public Capital Markets ○ Little tradition for initial public offering in the game industry ● Micro-loans ○ Opposition to loans in DK game industry
Culture	**Success stories:** ● Visible successes ○ IOI, SYBO, Ghost Ship Games, Betadwarf, Funday Factory ● Wealth generation for founders ○ No information ● International reputation ○ Same as the visible success companies **Societal norms:** ● Tolerance of risk, mistakes and failures ○ Connected to general tolerance, which is high, although Denmark has a tendency to swing right in terms of inclusion of foreign influences ● Innovation, creativity and experimentation ○ Less innovative than our Nordic neighbor, but high creativity and experimentation

	● Social status of entrepreneur ○ No information ● Wealth creation ○ No information ● Ambition, drive, hunger ○ Game developers are creative entrepreneurs, so they have a different kind of drive and ambition than most traditional entrepreneurs
Supports	**Non-government institutions:** ● Business Plan contests ○ Closest thing to this is the Growing Games workshops that Vision Danmark arranges ● Conferences ○ BusinessGames (discontinued in 2016), CPH Matchup, Nordic Game Conference, Game Jams - less focused on the business of games ● Entrepreneurship-friendly associations ○ Vision Danmark as the only interest organisation, but it is centralized and involves itself with complex multidisciplinary activities. Furthermore, it is expensive for an entrepreneur to become a member. ○ No speciality guilds **Infrastructure:** ● Incubators, co-working and clusters ○ One incubator with focus on games, one with a focus on digital production incl. Games, the SOLID program (discontinued) ○ Co-working spaces include GrowAAL in Aalborg, Spilhuset and the incubator in Aarhus ○ Cluster: VISION Danmark
Human Capital	**Labor:** ● Skilled and unskilled ○ The production of computer games require mostly specialized skill sets, acquired through self-teaching or university education ● Serial entrepreneurs ○ Very few serial entrepreneurs in the Danish game industry. Most due to the nature of creative entrepreneurship ○ Not a lot of companies are strong enough to cast off splinters or **Educational Institutions:**

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