Paving the way for new regional industrial paths:

Actors of change in Scania's games industry

Johan Miörner (johan.miorner@circle.lu.se)

CIRCLE, Lund University, Sweden

Michaela Trippl (michaela.trippl@circle.lu.se)

CIRCLE, Lund University, Sweden

Papers in Innovation Studies

Paper no. 2016/19

Paving the way for new regional industrial paths: Actors of change in Scania's games industry

Johan Miörner, Michaela Trippl

Abstract Recent scholarly work has enhanced our understanding of how new path development activities are enabled or constrained by 'regional environments', made up of pre-existing industrial structures, knowledge organisations, support structures and institutional configurations. This paper moves beyond overly static views on regional environments. We develop a dynamic perspective by analysing conceptually and empirically how a constraining environment can be transformed into one that enables the development of new growth paths. The paper offers a typology of various modes of change, including layering, adaptation and novel application that are used by key actors to 'manipulate' the regional support structures to facilitate new regional industrial path development. The conceptual framework is applied to a case study of the digital games industry in the region of Scania, southern Sweden. Our findings suggest that the creation of a more enabling environment for the growth of the digital games industry has been the outcome of multi-scalar processes and combinations of various modes of change employed by a few key individuals operating in the newly emerging path.

Paving the way for new regional industrial paths: Actors of change in Scania's games industry

Johan Miörner* (johan.miorner@circle.lu.se)
CIRCLE, Lund University, Sweden.

Michaela Trippl (michaela.trippl@circle.lu.se)
CIRCLE, Lund University, Sweden.

* Corresponding author. Address: CIRCLE, Lund University, Box 118, 221 00 Lund, Sweden. Phone: +46-(0)46-2220576

Abstract
Recent scholarly work has enhanced our understanding of how new path development activities are enabled or constrained by 'regional environments', made up of pre-existing industrial structures, knowledge organisations, support structures and institutional configurations. This paper moves beyond overly static views on regional environments. We develop a dynamic perspective by analysing conceptually and empirically how a constraining environment can be transformed into one that enables the development of new growth paths. The paper offers a typology of various modes of change, including layering, adaptation and novel application that are used by key actors to 'manipulate' the regional support structures to facilitate new regional industrial path development. The conceptual framework is applied to a case study of the digital games industry in the region of Scania, southern Sweden. Our findings suggest that the creation of a more enabling environment for the growth of the digital games industry has been the outcome of multi-scalar processes and combinations of various modes of change employed by a few key individuals operating in the newly emerging path.

Keywords: new regional industrial path development, actors of change, modes of change, digital games industry, Scania

Word count: 8372

JEL-Codes: O10, O30, O31, R10, R11

1 Introduction

Explaining how new regional industrial growth paths emerge and develop over time has become a key focus of enquiries in economic geography. In the past decade, scholarly work has moved beyond old conceptualizations of path creation as outcomes of exogenous shocks, chance events and serendipity, emphasizing that pre-existing local economic structures, resources and competences constitute the regional environment in which path development activities take place (Martin, 2010; Neffke et al., 2011). This has shifted attention to regional factors and conditions and the ways by which they enable or constrain the development of new industrial growth paths, i.e., the rise and evolution of new industries in a region.

We argue that there is a need to deepen our understanding of what factors in the regional environment are shaping the development of new industrial growth paths. The paper advocates a broad view and maintains that the regional environment in which new industrial paths emerge is not only made up of pre-existing industrial structures but also of historically grown organisational and institutional support arrangements. Furthermore, the characterisation of regional environments as enabling or constraining offers a static perspective on the relationship between new industrial path development and the regional context. New industrial growth paths often require a major reconfiguration of the regional organisational and institutional support structures (Martin & Simmie, 2008; Tödtling & Trippl, 2013). It is thus intriguing to explore how the transformation of regional support structures takes place and how these processes are shaped by key actors of change.

The role of actors of change, however, remains poorly understood in current accounts of new path development (Dawley, 2014). The literature has thus far been primarily concerned with the role of private actors involved in new firm formation and has only recently begun to examine how public actors influence new industrial path development (Sydow et al., 2010; Dawley, 2014; Dawley et al. 2015). It is necessary to consider the role of purposeful actors in a broader sense, as reproducing and transforming existing regional arrangements (Martin & Sunley, 2006; Martin, 2010) in addition to firm entrepreneurs mindfully deviating from existing paths (Garud & Karnøe, 2001).

The paper goes beyond overly static views on regional environments. We aim to contribute to the development of a more dynamic perspective by investigating conceptually and empirically how key actors induce changes in the regional environment, in order to 'turn' a constraining context into one that enables new industrial path development. Focusing on the organisational and institutional support structure as one important dimension of the regional environment, we address the following research questions: How can a regional environment be turned into being enabling for new industrial path development and what is the role of key actors in this process? By what modes do they change the regional environment?

The paper draws on recent scholarly work on the role of key actors in new path development. It offers a typology of various modes of change and seeks to explain the relation between different types of power held by key actors and the modes of changes that are employed to 'manipulate' the regional environment. The empirical part of the paper discusses findings from a case study of the digital games industry in Scania, an emerging industrial path that is geographically concentrated in the region's largest city, Malmö. Focusing on the regional organisational and institutional support structure, we demonstrate that reconfiguration processes of the regional environment have been the result of complex multi-scalar processes

and combinations of various modes of change employed by key individuals operating in the digital games industry.

The remainder of the paper is organised as follows. Section 2 offers a review of the literature and provides a conceptual discussion of transformation processes of organisational and institutional set-ups, focusing particularly on key actors and modes of change. In section 3 we present and discuss the findings of our empirical analysis. Section 4 summarises our main results and draws some conclusions.

2 Turning constraining environments into enabling ones: key actors and modes of change

The past years have witnessed a growing interest into the question of how new growth paths emerge and develop in regional economies (Martin & Sunley, 2006). Recent contributions to the literature have challenged the traditional canonical model of path dependence and its focus on chance, historical accidents and exogenous shocks as source of new path creation. New models foreground endogenous factors and mechanisms. Neffke et al. (2011, p. 261) noted that new regional growth paths "do not start from scratch but are strongly rooted in the historical economic structure of a region". In a similar vein, Martin (2010, p. 21) argues that new path development is shaped by "preexisting resources, competences, skills and experiences that have been inherited from previous local paths and patterns of economic development". New accounts thus highlight the (pre-existing) regional context in which path development takes place.

In the model suggested by Martin (2010), the development of new industries is both enabled and constrained by the environment inherited from previous regional industrial paths. However, there is a need to add more clarity and provide more detailed insights into *what* constitutes an enabling or constraining environment (Dawley, 2014) and *when and how,* in the course of new regional industrial path development, the environment is exerting an influence.

Attempts have been made in the regional innovation system (RIS) literature to specify which regional conditions are most beneficial (and which ones provide the biggest challenges) to new industrial path development. The RIS approach takes not only into account the industrial structure of the region, but also the network configurations (nature and geography of knowledge flows) and the organisational and institutional support structures (that is, knowledge organisations, support agencies and the institutional dimension). Isaksen and Trippl (2016) categorise RISs based on the level of organisational thickness and the degree of industrial specialisation and argue that various RIS types differ in their capacity to promote the emergence of new industries in the region. Organisationally thin RIS and organisationally thick and specialised RIS are seen as offering rather unfavourable conditions for the rise of new growth paths due to thin structures or the lack of variety in the industrial, organisational and institutional set-ups. In contrast, thick and diversified RIS are described as providing excellent regional conditions for new industries to emerge and flourish, as they host a large variety of knowledge and support organisations and a heterogeneous industrial base. In addition, they display a strong capacity to attract new skills and competencies from outside the region (Trippl et al. 2015). However, there may also be constraining factors, including economic, institutional, cognitive and social ones (Simmie, 2012) that could hamper the development of new growth paths in organisationally thick and diversified regions.

2.1 Factors constraining the development of new growth paths

Constraints may be found in the private sector, the public support structure and the institutional setting of the RIS. The rise and evolution of a new industry can be held back by a lack of resources, competencies and experiences related to the newly emerging industry. Due to limited experiences among capital providers (e.g. venture capital firms, business angels and banks), entrepreneurs may face difficulties to draw on local sources to obtain seed funding. In thick and diversified regions there is plentiful of public support for new firm formation (e.g. start-up grants, business incubators), but this is often adapted to the needs of existing industries and does not necessarily match the requirements of the new path. Low availability of finance and support for start-ups could thus be an obstacle for new path development (Gustafsson et al. 2016). Another barrier might be the lack of specialised labour. Even if a thick and diversified region offers a pool of skilled labour in a variety of fields, employees with prior work experience in the emerging field may not be obtained locally. Relevant educational programmes at local universities or vocational schools may not exist (yet), or are too generic, resulting in a mismatch between required and available skills in the region. Similar arguments might hold true for research organisations and the knowledge they generate. Constraining factors might also be related to missing support for networking activities between firms operating in a newly emerging path, leading to low levels of collaboration and knowledge exchange necessary for positive lock in and further growth of the new industry. Arguably, gaining support from public decision makers (in the form of customised infrastructure such as cluster organisations, business incubators, funding of projects, etc.) can be essentially important for a new industry to grow.

Barriers to new path development might also be found in the institutional dimension of RIS. Institutions tend to change slowly, which can hold back new economic development processes (Boschma & Martin, 2010). In addition, some regulative, normative, and cultural-cognitive institutions can hinder new path development processes by their very nature. This includes a lack of understanding among private actors and public authorities and uncertainties among new actors regarding future development prospects and policy support for the new path. Competition with well-established and other emerging paths in the region for human capital, infrastructure and other scare resources as well as for the attention and support of public policy may hamper the development of a new industry. Finally, 'political lock-in' (Grabher, 1993) could lead to a preference of supporting established players and paths rather than new developments.

2.2 From constraining to enabling environments: the role of key actors and modes of change

In the previous section we argued that a variety of factors could constrain the development of new regional industrial paths. Little is still known about how a constraining environment can be transformed into an enabling one through intentional and purposive actions taken by key actors of change. This section synthesises recent findings on key actors and different modes of change and applies them to the question of how regional institutional and organisational support structures are transformed to meet the needs of newly emerging industrial paths.

Actors of change

The role of key actors in new path development is, with some exceptions (see e.g. Dawley, 2014; Simmie, 2012; Simmie et al., 2014; Sydow et al., 2010), an under-researched topic. Simmie's (2012) seminal contribution draws on work by Garud & Karnøe (2001) and Garud et al. (2010) and approaches new path creation from a sociological perspective, arguing that through iteration and reflexive feedback loops actors are both embedded in the structures in which new paths emerge, and contribute to the creation of new development paths. Departing from the assumption that "new pathways are not created by disembodied economic forces but by knowledgeable agents" (Simmie, 2012, p. 760) and using insights from the literature on institutional change (Streek & Thelen, 2005), Simmie explains how new technological paths are created by agents. These agents can be both inventors (exploring new technologies) and innovators (exploiting new technologies). They deviate from past practices by conscious social actions with the intention of introducing and diffusing new technologies. To do so, they have to change the regional environment, particularly by overcoming barriers to new path creation (identified as the economic selection environment, technological paradigms, institutional hysteresis and technological regimes). In a later study, Simmie et al. (2014) apply this framework to the emergence of wind energy industries in Great Britain and Germany, adding more emphasis on the co-evolution between knowledgeable inventors and innovators, and initiatives by policy actors, in creating niche conditions supporting the emergence of new paths. This approach takes into account the social actions of intentional agents and how new paths through these actions change the environment, but is concerned mainly with the creation of new technological paths.

Dawley (2014) puts a more explicit focus on how agents deliberatively shape the regional environment to facilitate new path development. Taking on a multi-scalar and a multi-actor approach, he explores how regional and non-regional actors such as state agencies and public policy, experienced entrepreneurs and practitioners have shaped the development of the wind energy industry in Scotland by creating a favourable environment for its rise and further evolution. Policy actors played a role in promoting industry relevant R&D and together with key entrepreneurs they had an influence on FDI promotion, processes of strategic coupling and supporting knowledge transfer between different but related industries (Dawley, 2014).

Sydow et al. (2010) make the purposiveness and intentionality more explicit and extend the analysis to include the later stages of path development, beyond path creation. Based on findings from a case study of the Berlin-Brandenburg optics cluster the authors argue that actors in the cluster engage in networks deliberately planning for positive lock-in. They do so through communication and exercising power and sanctions, influencing interpretative schemes, supporting facilities and informal institutions (Sydow et al., 2010).

Moving beyond studies explicitly examining the role of agency in new path development, other strands of literature dealing with purposive and intentional change of RIS elements can be of use when examining how regional actors transform the regional institutional and organisational set-up. The literature on institutional entrepreneurship can help to understand in greater detail how institutions are changed by key actors. First introduced by DiMaggio (1988), institutional entrepreneurs are actors who do not comply with current institutions but mobilise resources, competences and power for the purpose of creating institutions or transforming existing ones. Building on this definition, Battilana et al. (2009) argue that institutional entrepreneurs are change agents who initiate divergent institutional changes and who actively participate in the implementation of these. The institutional entrepreneurship

concept has been used for example to explain how new beliefs, practices, and activities are institutionalised within a RIS during the development of new regional industrial paths (Sotarauta & Mustikkamäki, 2015). It has also been shown that institutional entrepreneurs can play a role in bridging actors and resources at different spatial scales (Karlsen et al., 2012).

Institutional entrepreneurs exercise different types of power when trying to change institutions, and power relations evolve over time with institutional change. Sotarauta and Mustikkamäki (2015) distinguish between three forms of power, that is, interpretative, network and institutional power. Interpretative power relates to the ability of actors to create a new vocabulary, promote new ways of looking at different functions in the RIS and lead a process of sense making around the particular institutional change. Network power is the power to remove obstacles for communication, information flows and collaboration. Institutional power is defined as the power to act, to make decisions, to create formal institutions and direct resources (Sotarauta & Mustikkamäki, 2015). Furthermore, Weik (2011) distinguishes between three types of institutional entrepreneurs: agents creating new institutions, removing existing institutions or changing established institutions.

Similar insights are offered by the literature on policy entrepreneurship. Policy entrepreneurs are individuals or organisations who are willing to invest own resources for seeking future returns, by attempting to initiate policy change (Edler & James, 2015; Mintrom & Norman, 2009). They are said to play a crucial role when it comes to identifying new opportunities for policy initiatives and mobilising and linking interests of various stakeholders (Edler & James, 2015). Policy entrepreneurs are not only public actors but can as well be private actors mobilising resources for policy change (Flanagan et al., 2011).

Arguably, different strands of literature emphasize different actors of change in creating a favourable environment for new path development and in transforming support structures. These structures consist of both organisational (knowledge organisations and support agencies) and institutional elements.

Modes of change: towards a typology

Drawing on the literature synthesised above, we acknowledge that actors of change range from inventors and innovators to policy actors and other stakeholders. These are intentional knowledgeable agents, but the purpose of their actions differs widely. Expressed in a stylized manner, some actors engage in the exploration and exploitation of opportunities for new path development (for example private actors through entrepreneurship) whilst others work to facilitate such processes (for example public actors through policy). Inspired by insights from the institutional- and policy entrepreneurship literature, we argue that a more fruitful approach is to depart from what is subject to change and how key actors promote change processes, rather than looking at it from the perspective that different actors have different roles. Hence, actors belonging to different categories can have multiple roles and the scope for change depends on a number of factors, such as the type and degree of power held and exercised by the actors.

Departing from Mahoney and Thelen's (2010) work on different types of institutional change and its application by Martin (2010) to regional industries, we suggest a typology for how key actors transform a constraining environment into an enabling one. This usually means altering the regional environment by creating new structures or transforming existing ones, but could

also imply that actors find new ways of using existing structures. We distinguish between three modes of change in the institutional and organisational support structure of regions, namely layering, adaptation and novel application. In a next step, we discuss these types in more detail and explain when and why the different modes occur, linking the characteristics of key actors to different modes of change.

Layering takes place when the support structure is gradually changed by adding new elements (such as policies and other institutions, and organisations). Layering processes are most likely to be initiated by actors with a high degree of power in their respective field. For example, public actors with a high degree of institutional power are likely to play a crucial role in creating new policy instruments whilst key entrepreneurs with a high degree of network- and interpretative power could lead a sense making process in which other actors are mobilised around a certain task. In turn, this could lead to direct layering processes by the creation of, for example, an industry organisation or indirectly by influencing policymakers through policy entrepreneurship. Thus, following insights from the institutional- and policy entrepreneurship literature, different types of power can be substituted with each other and the need for the different types of power differs with regard to what type of actor is engaging in change of what domain.

Adaptation refers to change within or reorientation of existing institutions and organisations and occurs when the actors do not have the degree of power necessary to facilitate the creation of new ones. There is a range of adaptation processes requiring various degrees of power. For example, adapting a formal regulation will indeed require a higher degree of institutional power, whilst adapting existing activities in the support structure could be facilitated by actor endowed with less power. Adaptation is thus a way for actors to transform the institutional and organisational support structure without having the power necessary to engage in the creation of new elements.

Novel application refers to the changed impact of existing elements due to new utilisation of the existing support structure, for example by actors creatively using existing policies in new, unintended and possibly unforeseen, ways. This is not to say that the degree of power is irrelevant, as actors will need some degree of interpretative power to effectively communicate for example the possibility of using existing policy initiatives in new ways among other actors in the industry. However, in this context, knowledge comes to play as an important factor. For example, an actor with a high level of knowledge about an emerging industry and the policy system, but with a low degree of power, might be able to identify possibilities for the existing structures to meet the needs of the emerging industry without actually engaging in neither processes of layering or adaptation.

The different modes of changes to the regional institutional and organisational support structure identified above are summarised in Table 1.

Table 1: Modes of change

Actors of change	Mode of change	Change of regional institutional and organisational support structure
High degree of power	**Layering**	Introducing new institutions (regulations, standards, routines, procedures), particularly creating new policy instruments (e.g. funding for cluster programmes, networking arenas, incubators). Creating new organisations (e.g. industry organisations, cluster organisations, educational bodies).
Medium degree of power	**Adaptation**	Changing existing formal and informal institutions (e.g. regulations, perception of the industry), for example by re-aligning or replacing existing policy instruments (adaptation of existing initiatives and programmes, creation of sub-initiatives). Adaptation of activities within existing structures (e.g. adapted education programmes, tailored incubation activities).
Low degree of power	**Novel application**	Benefiting from existing institutions by strategic and creative use of resources (using regulatory arbitrages, exploiting public opinions and norms). Using existing policy instruments in new ways. Using existing organisations and their activities in new ways (e.g. identifying relevant existing educational programmes, using support targeting other industries, "freeriding" on the image of other industry initiatives).

In a next step, the conceptual considerations outlined above will be applied to an empirical case study of the digital games industry in Scania.

3 Empirical analysis: actors and modes of change in Scania's digital games industry

Scania is the southernmost county of Sweden. The region has an organisationally thick and diversified RIS with a heterogeneous industrial structure and several well-established industrial growth paths (Business Region Skåne, 2016) and a strong endowment of universities and other knowledge generating organisations. Scania also hosts more than 100 intermediary organisations that support innovation and entrepreneurship in the region. Partly following critique in the local media, regional policy actors have recently acknowledged the need to consolidate the regional support system by reducing the number of intermediary organisations. With this background, the RIS of Scania provides favourable conditions for new path development, though there is reluctance among policy makers to further expand the public support structure to new areas of economic development.

The empirical analysis of actors and modes of change in Scania's digital games industry is based on qualitative research methods, including document studies and personal interviews with key actors. A number of 13 in-depth face-to-face interviews (lasting between 60 and 90 minutes) were conducted between October and December 2015. The interviews were transcribed and the data was triangulated with findings from policy reports and other publicly available secondary data. Seven interviews were with founders and CEOs of firms located in the region, two were with representatives of the public sector, one interviewee was from the educational system and three were industry experts belonging to local and national industry organisations. Interviewees were identified by a "snowballing" technique, selecting the first key interview partners by identifying main firms and other key actors through document studies. By interviewing actors from different categories, including both interview partners identified as important actors of change and actors who have not been directly involved in change processes, the findings are based on the perspectives of a variety of different actors.

3.1 The digital games industry in Scania

The digital games industry in Scania is a rapidly growing new industrial path in the region. Today, the digital games industry in Scania consists of approximately 40 firms with 600-700 employees (Game City, 2015). The largest firms are Massive Entertainment (390 employees), King (80 employees) and Tarsier Studios (38 employees), representing a majority of the industry in terms of employment. In addition, there is a high number of start-ups and young small firms. More than half of the firms have been founded after 2010. Geographically, the industry is strongly clustered in Malmö (Game City, 2015).

The seeds for the emergence of a digital games industry in Scania were planted in the neighbouring region of Blekinge during the end of the 1990s. Many of Scania's leading games companies were founded in Blekinge at that time, as a result of a variety of factors creating favourable conditions for these firms to develop, including public support. In our interviews with representatives of the firms that later relocated to Malmö, GamePort (a game development branch of the NetPort incubator targeting the ICT sector), game development education programmes at Blekinge Institute of Technology and the School of Future Entertainment (a vocational training school) were mentioned as being most important. At the beginning of the 2000s, several of the successful firms in Blekinge decided to relocate to Malmö. One important reason indicated by our interview partners was that in order to continue to grow, they needed to secure access to relevant competence, especially in terms of senior developers. As this was not available in Blekinge, the firms needed to either move to a location where competence was widely available or to a location which was attractive for alluring experienced talent from abroad (which was not the case with the peripheral region of Blekinge). Due to the latter, Malmö became the city of choice for some of the early movers in the industry. From originally being driven by the relocation of established firms, the digital games industry in Scania is now developing through spin-off and start-up activities in Malmö.

3.2 Constraining factors and the need for transformation

During the past decade, the development of the gaming industry has been hampered by a set of constraining factors in the regional support structure. It has only been recently that changes towards a more enabling regional context have taken place. In this sub-section, we shed light on the nature of constraints and concretise the problems emanating from these in relation to the digital games industry in Scania.

First, the higher education institutions present in the region have shown a limited capacity to satisfy the industry's need for young skilled talent. An education programme in game development launched by Malmö University College has been characterised by the interviewed firms as being "too academic" and poorly equipped to meet the requirements of the industry. This holds true also for education programmes in software engineering and other related fields at the Faculty of Engineering at Lund University. This has resulted in a mismatch between the education offered by higher education institutions and the requirements of firms operating in the digital games industry.

Second, there was a lack of customised public initiatives for promoting networking activities, funding development projects and providing support services to start-ups and young firms. Public support for start-ups abounds in the region, with a number of both generic and

specialised incubators and agencies providing start-up grants. However, the existing support does not fit the particular characteristics of the digital games industry. One concrete example is the MINC business incubator in Malmö which provides business development support and office space for new start-ups in a wide range of industries. However, it has so far not been able to 'reach' the digital game industry. This has been attributed to being a result of this cultural mismatch between individuals in the digital games industry and the support for entrepreneurial activity more in general. Existing structures providing support for example to the new media industry and cultural industries did not fit the needs of the digital games industry. Several of our interview partners expressed that game developers are different in terms of culture than people working in, for example, the new media industry, being less outgoing than the media entrepreneurs.

Third, there was (and still is) a lack of both private and public support for start-ups in the region. Private venture capital is scarce and firms in the digital games industry in Scania have to a large extent rely on organic growth, starting a firm with own money to growing larger through series of successful game development projects.

In addition, some interview partners have raised the lack of knowledge about the games industry among business support organisations as being a key barrier. For example, it is hard for business development support agencies such as ALMI (a publicly owned organisation that provides loans, venture capital and advisory services to start-ups) to evaluate the business potential of new firms due to the 'single-project' nature of the digital games industry and a lack of documented experience among young developers.

Being a diversified region hosting many different industries and likely influenced by the public debate about the proliferation and fragmentation of the intermediary sector, policy actors have been reluctant to create new support organisations and initiatives for the digital games industry. Instead, they have argued that digital games firms should make use of existing support structures established for the new media industry. However, this view has not been shared by our interview partners, who argue that cultural differences and the broad focus of the new media sector makes it hard for game developers to get the support they need. Furthermore, the digital games industry has not been perceived as being "serious business" by policy makers or in the public opinion. This perception has been persisting despite the recent rapid growth in the industry, especially in terms of export, and high-profile acquisitions. The lack of understanding among public authorities of the potentials of the industry has thus reinforced their resistance to provide customised support. Finally, the large number of emerging paths and established industries in Scania, and the resulting competition for the attention of policy makers, have been another reason for the absence of public support for the digital games industry at early stages of its development.

In the next section, we investigate how various key actors have employed different modes of change to overcome the constraints outlined above, leading to the creation of a more favourable environment for the growth of the digital games industry.

3.3   Reconfiguration of support structures and the role of key actors of change

Over the past few years the organisational and institutional support structures in the region have been reconfigured to facilitate new path development activities in the field of digital games. Our empirical study focuses on three new elements in the regional environment, that

is, the Nordic Game Conference, the Game Assembly and Game City. These have been highlighted by all interviewees as being particularly important for the development of the regional industry. In addition to the three cases presented below, we have found evidence of several smaller change processes, with less of an impact on the industry as a whole. For example, some small firm have secured funding from the national innovation agency Vinnova by aligning development projects with grand societal challenges, thus engaging in a novel application of existing structures. Another example involves networking activities among a handful of firms developing games for mobile platforms, representing a process of layering.

In the following sub-sections, we will investigate through which modes of change the three organisations and activities mentioned above came into being, paying particular attention to the role of key actors of change in their creation. Our empirical findings indicate that several of these actors were 'outsiders', or 'returnees' having moved from the region to other regions to study or work, bringing back competences or experiences from elsewhere. How they used this to influence the regional environment is investigated below.

The Nordic Game Conference

The Nordic Game Conference (NGC) is an annual game development conference held in Malmö. It is among the largest conferences in this field in Europe. NGC benefits regional firms by providing networking opportunities, both with other regional actors and with extra-regional firms. Interviewees also pointed to NGC's role in marketing Scania as a "game development region", increasing the attractiveness and thus making it easier to recruit foreign talent and to get access to funding opportunities such as venture capital.

Modes of change
The creation of NGC represents a case of layering in the regional support structure, but has been preceded by a process of adaptation at higher spatial scales. The conference was initially a way of disseminating the results of the Nordic Game Programme, a policy initiative funded by the Nordic Councils of Ministers intended to support the development of games in the Nordic languages. Forming NGC was not part of the initial project description, but was the outcome of an adaptation of the existing Nordic Game programme. Consequently, the creation of a new supporting element in the region took place with support from the Nordic level without any substantial involvement of regional stakeholders at the beginning.

More recently, through a process of novel application of existing regional structures, the conference has received financial support from the City of Malmö and Region Skåne, the highest elected regional government body. In order to access funding, the applications were written together with Media Evolution, a well-established support organisation in Scania. This was accounted by one of our interviewees to be a result of policy makers being reluctant to create new support structures. It was thus the use of existing policy instruments and organisational support structures in new, creative ways that secured funding for the conference at this stage.

Actors of change
Unlike most other policy programmes, the Nordic Game Programme was administrated by a private contractor based in Malmö through his existing company. This private entrepreneur has had a personal interest in the digital games industry since the mid-1990s, and had been

engaged in mapping the industry both locally and nationally to increase awareness amongst policy makers of its importance. In addition, he had experiences in working in the public sector, for example by being involved in setting up a support agency for start-ups. Being deeply embedded in the digital games industry already at an early stage, the private entrepreneur approached the Nordic council of ministers and aided them in designing, and later administering, the Nordic Game Programme.

In the adaptation process of the existing programme, which led to the creation of NGC, the private entrepreneur played a crucial role. In terms of power, he had a high degree of interpretative power at the Nordic level, and expressed in our interview that his personal preference was to locate the conference permanently in Malmö. When convincing the council of ministers to adapt the existing programme he made use of his deep knowledge about the regional conditions, underlining the existence of a newly emerging vibrant industry in Scania.

However, the entrepreneur did not have enough institutional power at the regional level to permanently add new layers to or adapt the established public support structures, constraining his room for manoeuvre to the creative use of existing policy initiatives. However, even though this has secured public funding for the conference, it has not been followed by an adaptation of existing or introduction of new organisational or institutional set-ups at the regional level.

The Game Assembly

When the industry grew rapidly in the mid-2000s, the need for skilled workers became more pronounced. The firms recruited highly qualified senior game developers from abroad, but junior talent was missing in the region. This constraint has partly been overcome by the foundation of 'The Game Assembly' (TGA) in 2008, an advanced vocational training school, providing education targeting the needs of the industry. It has been stressed by our interview partners as an important source of skilled junior talent in the region. For example, more than 70 employees of Massive Entertainment have been trained at TGA.

Modes of change
The creation of TGA represents a case of layering at the regional level, facilitated by a combination of adaptation and novel application of existing structures at other spatial scales. A firm operating vocational training schools in various sectors all over Sweden was approached by representatives of Massive Entertainment, and were presented with the plan to start an educational programme in Malmö in close connection with the local industry. They adopted the idea and study plans were written in collaboration with one of the lead programmers at Massive Entertainment, subsequently approved by the Swedish National Agency for Higher Vocational Education. TGA's early educational activities benefited from hiring staff who had previously been working at a vocational training school in Blekinge, where many of Scania's big gaming firms have their origin.

Actors of change
With knowledge obtained from experience with vocational training in Blekinge in combination with a deep knowledge about the needs of the regional industry, and a high degree of interpretative and network power within the industry, a private entrepreneur could approach an extra-regional educational body and convince them to establish a vocational training school in Malmö. In turn, this led to the involvement of other key actors and ultimately to the approval of the educational programme on the national level.

With the approval by the Swedish National Agency for Higher Vocational Education, key actors of change have mobilised power needed for the creation of TGA, a new organisation offering new educational activities in the region. TGA thus represents a case of layering at the regional level, initiated by a key individual player who managed to access resources and power at other spatial scales to initiate the introduction of a new element to Scania's support structure.

Game City

Game City is a cluster initiative intended to coordinate firms and other actors in the industry, provide networking- and other types of support and work with increasing the awareness of the digital games industry among regional policymakers.

Modes of change
Representatives of the industry initially tried to start Game City within the existing cluster organisation for the new media industry, Media Evolution. This attempt to adapt the existing support structure was, however, unsuccessful. At that time, Media Evolution was still positioning itself as *the* new media support organisation in the region, refusing provision of customised activities targeting the digital games industry. Instead, Game City was started as an independent initiative, by mobilizing support from within the industry and forming a cluster organisation with involvement of big and many smaller game development firms. Thus, this resulted in a case of layering in the regional support structure.

Game City was unable to identify funding opportunities suitable for the organisation. Due to the already large number of support bodies present in the region, Region Skåne was reluctant to fund an additional cluster organisation (see section 3.2). Things partly changed during spring 2015, when Game City received funding from the City of Malmö and Region Skåne for employing a person working 50% for one year in the organisation. Since Region Skåne had a negative attitude towards establishing a new cluster organisation, the solution was to find a joint cause together with Media Evolution and apply through the existing support structures. In this case, Game City wrote an application for a programme tackling youth unemployment together with Media Evolution and was granted public funding. Here, institutional constraints hindered layering of new policy initiatives to occur, which was however circumvented by a novel application of existing structures.

Actors of change
Throughout the process of creating Game City, incremental processes of adaptation of informal institutions took place. Key individuals engaged in public opinion forming, promoting the seriousness of the digital games industry as both an industry and a business opportunity. In our interviews, the importance of a small number of key actors has been stressed in this regard.

Furthermore, in the initial process of layering, one of the founders of Massive Entertainment played a key role. He was a board member of Media Evolution and according to out interviews, he tried to start Game City as a sub-organisation of Media Evolution but was not successful (see above). Failing at initiating a process of adaptation, he approached a group of key actors in the industry and formed Game City as an independent, privately funded initiative. Thus, the lack of institutional and interpretative power within the existing support

structures was compensated by a high degree of interpretative and network power at the industry level.

More recently, through the ongoing process of changing informal institutions and improving the perceived seriousness of the industry, Game City as an organisation managed to gain enough interpretative power to make an impact also in the public sphere, overcoming a lack of institutional power. The reluctance and scepticism among policymakers to fund a new cluster organisation were circumvented by a novel application of existing funding opportunities, in agreement with policymakers. By using Media Evolution as the channel and a scheme for tackling youth unemployment as the mean, Game City managed to secure funding without making substantial changes in the policy system, but with the result of taking small steps towards becoming a stronger player in the region.

Arguably, the Nordic Game Conference, the Game Assembly and Game City have different origins and they vary in terms of processes that have led to their establishment. However, all three cases show that changes in the organisational and institutional set-up have been initiated and implemented by a few individual key actors of change, who have, in the course of time, employed a mix of various mode of change to improve the conditions for growth of the digital games industry in Scania. Our analysis also suggests that the processes behind these changes have been multi-scalar in nature. Another common element is the close link between actor characteristics (power and knowledge) and the change mechanisms used by them.

4   Conclusions

Recent scholarly work has enhanced our understanding of how new path development activities are shaped by regional environments, made up of pre-existing industrial structures, knowledge organisations, support structures and institutional configurations. A distinction has been made between enabling and constraining environments, pointing to varying capacities of regions to provide favourable conditions for the rise and development of new growth paths.

The aim of this paper was to move beyond a simple characterisation of regional environments as enabling or constraining and the static view it offers on the nexus between new path development and the regional context. We sought to develop a more dynamic perspective to highlight how a constraining environment can be transformed into a more enabling one, giving primary emphasis to the role played key actors in such reconfiguration processes. Furthermore, borrowing ideas from the literature on institutional change we suggested a typology of various modes by which actors overcome constraining factors and contribute to the creation of a favourable environment for new growth paths. A distinction between three modes of change has been drawn, including the creation of new elements in the support structure ('layering') as well the 'adaptation' and 'novel application' of the existing support organisations and institutions. We advanced the argument that there is a close link between characteristics of key actors and the modes of change employed by them. Actors with a high degree of power can engage in layering processes, whilst actors lacking such power can only rely on adapting existing elements, or using existing structures in new, and possibly unintended or unforeseen, ways.

The conceptual framework has been applied to the digital games industry in Scania. We identified a set of factors constraining the development of this new growth path, including an insufficient supply of young skilled talent and a lack of customised policies to promote

networking, new firm formation and development projects. It was found that these factors reflect and are closely related to path dependencies in the higher education and public policy and support systems, lacking experiences with and knowledge of the new industry as well as competition with other regional industries for policy support.

The paper investigated how key actors of change have overcome these constraints. In line with the conceptual framework we revealed that actors' degree of power had a strong influence on which modes of change are employed to reconfigure the regional environment. Furthermore, our study has shown that the key actors of change described in our case by no means are 'heroic individuals', but that changes in the organisational and institutional set-up have relied heavily on the mobilisation of other actors. The results presented in this paper thus confirm the view from the literature that change processes are often a collective endeavour.

Our analysis also points to the need to extend the conceptual framework in several ways. The empirical findings presented above suggest that the creation of a more enabling environment for the growth of the digital games industry has been the outcome of a complex interplay of various modes of change, pointing to both simultaneous and sequential processes involving novel applications and adaptations of existing support structures and the creation of new ones. The question of when, why and how change modes are combined requires more conceptual and empirical research in the future.

Our study has also shown that change processes are multi-dimensional in nature, involving change in several dimensions (institutional, policy, industrial and organisational change) and have included key actors from different domains. In Scania, these actors have mainly belonged to the private sector.

Furthermore, the analysis of the digital games industry suggest that actors of change are navigating through different spatial scales in order to identify and source assets for inducing change at the regional level. Thus, our findings emphasise the role of regional key actors but acknowledges that these are not bound to use resources available only at the regional level. On the contrary, actors lacking the necessary power on the regional level are likely to search for opportunities for facilitating change in the institutional and organisational support structure by turning to existing structures and possibilities at other spatial scales. This implies that the multi-scalar perspective brought forward in previous studies should be further strengthened. In the case described in this paper, both sourcing of resources from other places and higher spatial scales, and the transfer of knowledge and solutions learnt in other locations by key actors ('outsiders' or 'returnees'), have been influential in the change processes analysed.

Finally, our study offered insights into the sustainability of the outcomes of different modes of change. There is no inherent hierarchy between the modes of change identified in this paper. A novel application of existing structures could be as beneficial as a layering of new elements in the regional environment.

Arguably, our findings are only based on one case and we do thus not claim that they are generalizable to other growth paths and regions. More conceptual and empirical research is needed to better understand how key actors of change influence the regional environment to establish more favourable conditions for the development of new industrial growth paths. One key issue that deserves more attention in future research is how key actors navigate through various spatial scales to mobilise resources for inducing change in the regional environment.

Another core question concerns the interplay and interrelations of various modes of change and their relation to the knowledge and power of key actors employing these modes. A third remark is that our focus was on one particular aspect of the regional environment, that is, the organisational and institutional support structures present in the region. Future studies should direct attention to other elements of the regional environment to increase our knowledge of how regional conditions change to facilitate the rise and dynamic evolution of new regional industrial growth paths.

References

Battilana J, Leca B, and Boxenbaum E. (2009). How actors change institutions: towards a theory of institutional entrepreneurship. *The academy of management annals 3*(1): 65-107.

Boschma R and Martin R. (2010) The Aims and Scope of Evolutionary Economic Geography. In Boschma R and Martin R. (eds.) *The Handbook of Evolutionary Economic Geography*. Cheltenham and Northampton: Edward Elgar. 3-39.

Business Region Skåne (2016) Skåne developing with innovation arenas and clusters. [Electronic] Accessible: http://www.skane.com/en/skane-developing-with-innovation-arenas-and-clusters (Accessed 24 February 2016)

Dawley S. (2014). Creating new paths? Offshore wind, policy activism, and peripheral region development. *Economic Geography 90*(1): 91-112.

Dawley S, MacKinnon D, Cumbers A and Pike A. (2015) Policy Activism and Regional Path Creation: The Promotion of Offshore Wind in North East England and Scotland. *Cambridge Journal of Regions, Economy and Society* 8(2): 257-272.

DiMaggio PJ. (1988). Interest and agency in institutional theory. *Institutional patterns and organizations: Culture and environment*. Cambridge: Ballinger. 3-22.

Edler J and James AD. (2015). Understanding the emergence of new science and technology policies: Policy entrepreneurship, agenda setting and the development of the European Framework Programme. *Research Policy* 44(6): 1252-1265.

Flanagan K, Uyarra E and Laranja M. (2011). Reconceptualising the 'policy mix' for innovation. *Research policy* 40(5): 702-713.

Game City (2015) Southern Sweden Games Industry Survey 2015. [Electronic] Accessible: http://www.gamecity.se/survey2015/ (Accessed 24 February 2016)

Garud R and Karnøe P. (Eds.) (2001) *Path dependence and creation*. Psychology Press.

Garud R, Kumaraswamy A and Karnøe P. (2010) Path dependence or path creation?. *Journal of Management Studies* 47(4): 760-774.

Grabher G. (1993) *The embedded firm.* London: Routledge. 255-277.

Gustafsson R, Jääskeläinen M, Maula M and Uotila, J. (2016) Emergence of Industries: A Review and Future Directions. *International Journal of Management Reviews* 18: 28-50.

Isaksen A. and Trippl M. (2016) Path Development in Different Regional Innovation Systems. In: Parrilli MD, Fitjar RD and Rodriguez-Pose A (Eds.) *Innovation Drivers and Regional Innovation Strategies*. Routledge. 66-84.

Karlsen J, Larrea M, Wilson JR and Aranguren MJ. (2012). Bridging the gap between academic research and regional development in the Basque Country. *European Journal of Education* 47: 122–138.

Mahoney J and Thelen K. (2010) A theory of gradual institutional change. In: Mahoney J and Thelen K (eds) *Explaining institutional change: Ambiguity, agency, and power.* Cambridge University Press.

Martin R. (2010) Roepke lecture in economic geography—rethinking regional path dependence: beyond lock-in to evolution. *Economic geography* 86(1): 1-27.

Martin R and Simmie J. (2008) Path dependence and local innovation systems in city-regions. *Innovation* 10(2-3): 183-196.

Martin R and Sunley P. (2006) Path dependence and regional economic evolution. *Journal of economic geography* 6(4): 395-437.

Mintrom M and Norman P. (2009) Policy entrepreneurship and policy change. *Policy Studies Journal* 37(4): 649-667.

Neffke, F., Henning, M., & Boschma, R. (2011). How do regions diversify over time? Industry relatedness and the development of new growth paths in regions. *Economic Geography* 87(3): 237-265.

Simmie, J. (2012). Path dependence and new technological path creation in the Danish wind power industry. *European Planning Studies* 20(5): 753-772.

Simmie, J., Sternberg, R., & Carpenter, J. (2014). New technological path creation: evidence from the British and German wind energy industries. *Journal of Evolutionary Economics*, *24*(4), 875-904.

Sotarauta, M., & Mustikkamäki, N. (2015). Institutional entrepreneurship, power, and knowledge in innovation systems: institutionalization of regenerative medicine in Tampere, Finland. *Environment and Planning C: Government and Policy*, *33*(2), 342-357.

Sydow, J., Lerch, F., & Staber, U. (2010). Planning for path dependence? The case of a network in the Berlin-Brandenburg optics cluster. *Economic Geography*, *86*(2), 173-195.

Tödtling, F., & Trippl, M. (2013). Transformation of regional innovation systems. In Cooke P. (Ed.) *Re-framing regional development: Evolution, innovation, and transition*. Oxon: Routledge.

Trippl, M., Grillitsch, M., & Isaksen, A. (2015). *External "energy" for regional industrial change: attraction and absorption of non-local knowledge for new path development* (No. 2015/47). CIRCLE, Lund University.

Weik, E. (2011). Institutional entrepreneurship and agency. *Journal for the Theory of Social Behaviour* 41(4): 466-481.