
Transitional practices in the pre-start-up phase of academic spin-off creation: an explanatory case study

Emmanuel D. Adamides* and Eleni Karfaki

MEAD-School of Engineering,
University of Patras,
Rio 26500, Greece
Email: adamides@upatras.gr
Email: ekarfaki@upatras.gr
*Corresponding author

Abstract: The purpose of this paper is to shed light on the pre-start-up phase of a university spin-off, investigating how a group of researchers becomes an entrepreneurial team through the transformation of its work practices. Towards this end, we adopt Bourdieu's relational social practice theory for developing a set of interrelated propositions regarding the role of *transitional entrepreneurial practices* and their underlying producing mechanisms in this phase. It is proposed that induced transformational practices and changes in the underlying mechanisms result in reinforcing dynamics that can break the circle of social reproduction of an academic research group and direct it towards entrepreneurship. The propositions are explored in a longitudinal case study of an academic entrepreneurial team in a European peripheral economy.

Keywords: university spin-off; entrepreneurial team; practice; Bourdieu; relational approach.

Reference to this paper should be made as follows: Adamides, E.D. and Karfaki, E. (2022) 'Transitional practices in the pre-start-up phase of academic spin-off creation: an explanatory case study', *Int. J. Entrepreneurship and Innovation Management*, Vol. 26, Nos. 1/2, pp.1–24.

Biographical notes: Emmanuel D. Adamides is an Associate Professor of Operations and Technology Management in the Section of Management and Organisation Studies of the Department of Mechanical Engineering and Aeronautics of the University of Patras. He holds a BSc from the University of Sussex, UK, a MSc(res) from the University of Manchester, UK, and a DrEng from the Democritus University of Thrace, Greece. Prior to joining the University of Patras, he has held academic positions in Greece and Switzerland, and has been a manager and consultant to the industry. His research interests are in the application of systems and social practice theories to operations strategy, technology and innovation management, and entrepreneurship.

Eleni Karfaki is a senior researcher in the Section of Management and Organisation Studies of the School of Engineering at the University of Patras. She holds a BA in Management, an MBA and a PhD in Strategic Operations Management, all from the University of Patras. She has a long teaching experience in many higher education institutions in Greece. Her research interests are in the areas of strategy, innovation management and entrepreneurship of small high-technology companies.

1 Introduction

In academic entrepreneurship, the transformation of a research group into an entrepreneurial team is neither spontaneous, nor takes place in a socioeconomic vacuum (Vohora et al., 2004; Groen et al., 2008; Venturini and Verbano, 2017). By focusing on the transformed and the transforming practices carried out by the members of the group and related stakeholders, the interest of this paper is in the *transitional period*, during which, an academic research group becomes an entrepreneurial scheme. Our interest goes beyond mere descriptions of contingencies in the entrepreneurship process, to *explain* what causes these transformational practices. Towards this end, we employ a holistic theoretical approach that integrates individual, organisational, institutional and social dynamics as interconnected and co-generative attributes (Forson et al., 2014). We rely on the social practice theory of Bourdieu (1977), which suggests that practices are the result of *positions* and *dispositions* of the actors belonging to a particular social structure, such as a research group. We additionally include *figurational* structures (Tsoukas, 1996; Mouzelis, 2008) in the analysis to also account for deliberate strategising. Hence, in such an organisational perspective (Nicolini, 2013), academic entrepreneurship can be thought as the result of changes in the positional, dispositional and figurational structures of an academic research group, which enable a set of entrepreneurial practices, and which, being in a dialectic relationship with, modify the underlying generating structures, and so on. It is proposed that this constitutes a transitional period which can be initiated by new member(s) addition(s) [such as surrogate academic entrepreneurs (Brennan and McGowan, 2006; Franklin et al., 2001)], as well as by other disposition and capital-transforming events (Forbes et al., 2006; De Clercq and Voronov, 2009).

Based on the above logic, we have formulated a set of propositions, and then used a case study of creation of an ICT university spin-off in the academic and business context of a peripheral European economy (Greece) to explore it. Case study is an appropriate research methodology as our interest was to research and understand micro-level organisational processes in close interaction with practitioners (Yin, 1994; Jarzabkowski, 2005; Terjesen and Elam, 2009; Johannisson, 2011). Clearly, the investigation and support of such propositions necessitates the consideration of social practices at two nested levels of practice: intra-group and inter-group in the wider socio-economic environment (Venturini and Verbano, 2017).

The contribution of this paper to academic entrepreneurship research is twofold. First, as far as methodology is concerned, it shows how a holistic multi-level practice perspective facilitates the surfacing of the motivational forces and triggering mechanisms of academic spin-off creation. Second, regarding theory that explains academic entrepreneurship, it stresses the importance of *transitional practices* between pure academic research and entrepreneurial activity and their underlying generating mechanisms. In a pre-start-up phase, interactively with external agents, these mechanisms graft the academic research group with appropriate dispositions and capital to enter the business field as a spin-off venture.

Following, we first position our paper in the literature of academic entrepreneurship and discuss the importance of practice approaches in researching entrepreneurial teams. We then introduce Bourdieu's practice theory and develop our set of propositions. Next, we present our case study and its analysis, before the conclusions of the research are drawn.

2 Academic spin-off creation: a critical overview

Over the last 30 years, the process of academic spin-off creation has been of interest to the innovation and entrepreneurship literature (Miller et al., 2018). Descriptions of multi-stage, primarily normative, linear models of this process concentrating on ‘push’ contextual factors have been proposed (Ndonzuau et al., 2002; Clarysse and Moray, 2004; Vohora et al., 2004; Gübeli and Doloreux, 2005; Vanaelst et al., 2006; Krabel and Mueller, 2009; Venturini and Verbano, 2017). These models focus on *critical junctures* between stages (such as, research, opportunity framing, pre-organisation, re-orientation and sustainable returns) (Vohora et al., 2004), or on the stages of the evolution of a business *idea* into a *firm* that delivers value (Ndonzuau et al., 2002), or even on the evolution of the *entrepreneurial team* and the activities in which it is involved (Clarysse and Moray, 2004). Several attempts to identify *ex ante* factors contributing to the success of this process have also been made (Steffensen et al., 2000; Beibst and Lautenschlager, 2004; Smilor and Matthews, 2004; Clarysse et al., 2005; Lockett et al., 2005; Helm and Mauroner, 2007; Bessi re et al., 2017).

Complementary to the above, research on ‘pull’ factors has concentrated on the individual academic entrepreneur and his/her motivations, and on learning activities towards entrepreneurship (Sanz-Velasco and Saemundsson, 2008; Jain et al., 2009; Bicknell et al., 2010; Feldmann, 2014; Miranda et al., 2017). As academic entrepreneurship and spin-off creation is a team effort (Clarysse and Morey, 2004; Vanaelst et al., 2006), a shift in the focus of attention to the interior of entrepreneurial *teams* was inevitable (Clarysse and Morey, 2004; Ruef, 2010; Vanaelst et al., 2006). Entrepreneurial teams have been considered from social psychology (Thibaut and Kelly, 1959) and demographic perspectives [e.g., relational demography (Riordan, 2000), including upper echelon theory (Hambrick and Mason, 1984)]. Nevertheless, in addition to behaviourism, social psychology approaches’ interest is confined to within the boundaries of the team (Clarysse and Moray, 2004), leaving the external context in the background. On the other hand, the interest of demographic approaches is limited to cognitive/rational processes and their convergence (Wadeson, 2008), ignoring the richness of bodily activities in a social context. They are all essentially descriptive approaches that leave the black box of entrepreneurial activity intact (Clarysse and Moray, 2004), while, when the black box is opened (e.g., Chen et al., 2017), in the absence of a concrete grounding theory, the context-specific insights gained cannot be generalised.

Overall, research on academic entrepreneurship and spin-off creation described different facets of the phenomenon and arrived, both deductively and inductively, at contingencies with pull and push factors that enable or hinder such efforts. However, this research is weak at *explaining* academic entrepreneurship at group level, i.e., why and how a group of researchers change course and becomes an entrepreneurial team; which underlying structural and behavioural changes generate the observed transformation? Clearly, such an endeavour needs to take equal distances from both agent-driven and context-based structured explanatory narratives and their associated research approaches, and consider in a systemic multi-level manner, the individual/group, organisational, institutional and social perspectives (Tatli et al., 2014). The adoption of Bourdieu’s practice theoretical base is in this direction.

3 Bourdieu's practice theory as a perspective for analysing university spin-off creation

3.1 *The practice turn in entrepreneurship research*

A *relational* perspective places entrepreneurship in its actual context *as it takes place* and uses *relationality*, and not mere *contingency*, as the lens for understanding the social world. It views social phenomena as “dynamically evolving, gaining meaning and shape in a web of complex relationships in a situated context” (Kyriakidou and Özbilgin, 2006; Tatli et al., 2014; Hill, 2018), where structure leads to activity, and activity modifies structure. The relational perspective has been directly associated with the so-called ‘practice turn’ in social sciences, which influenced many areas of management/organisational (Jarzabkowski, 2005; Nicolini, 2013; Lockett et al., 2014) and entrepreneurship research (De Clercq and Voronov, 2009; Terjesen and Elam, 2009; Johannisson, 2011; Tatli et al., 2014). In the practice perspective, the entrepreneur(s) is considered neither to be totally defined by the context in which she operates, nor totally independent from it as an a-historic ‘heroic creator’ (Steyaert, 2007). The entrepreneur(s) is *carrier(s)* of the social structure (organisational, institutional and social attributes), some of which she has the capability to change through practices that are embedded in the broader social environment/structure.

Beyond theoretical considerations (Tatli et al., 2014), the attempts to approach issues of entrepreneurship from a practice stance are relatively rare and limited to specific concepts (e.g., Hjorth and Steyaert, 2003; Bruni et al., 2004; De Clercq and Voronov, 2009; Terjesen and Elam, 2009; Johannisson, 2011). In the limited number of related publications, Bourdieu, as a prominent social practice theorist has a significant share. Individual, as well as combinations of, concepts of Bourdieu's theory have been employed for, among others, understanding how new entrepreneurs entering a field gain legitimacy (De Clercq and Voronov, 2009; Gomez, 2015), to complement research on entrepreneurial resourcing (Keating et al., 2013), to understand networking practices in seeking growth opportunities (Anderson et al., 2010), to explore transnational entrepreneurs' internationalisation strategies (Patel and Conklin, 2009; Terjesen and Elam, 2009), as well as for understanding entrepreneurial careers (Zikic and Ezzedeen, 2015) and academic entrepreneurship at the meso and macro levels (e.g., Ikeatuegwu and Dann, 2016; Adamides, 2018). However, overall, in management and entrepreneurship literature, Bourdieu's *system* of concepts is more frequently *referred to* than actually *used* (Karfaki and Adamides, 2016).

3.2 *Bourdieu in spin-off creation – development of propositions*

For Bourdieu (1990), social/organisational reproduction takes place through practice, and individual and collective practice (activity) cannot be understood outside the social context where it takes place (the *field*), the resources owned by agents (*capital*) which define their positions and stakes in the field/organisation, and their *habitus*, or envelope of *dispositions* vis-à-vis the field. The field is a structured set of social *positions* occupied semi-permanently by actors competing to gain access to resources/rewards, and to maintain or alter the distribution of capitals, i.e., resources, power relations and profits which are at stake. Agents belong to more than one field at a time in a common social space, the *field of power*, which indicates how individual fields are positioned, and what

is the importance of each one in relation to the others. Bourdieu identified various forms of capital (Bourdieu, 2005; Gomez, 2015): *economic*, which reflects the command over economic resources, *social*, which reflects the capacity of agents to connect and to participate in networks, and *cultural capital*, which reflects the level of education, skills and competences. The latter has many traits: *bureaucratic* – associated with the possession of formal positions in institutions and organisations, *organisational* – mastering of procedures and rules, *informational* – privileged access to knowledge, and *technical* – skills related to technologies. Agents possess combinations of these forms. All forms of capital are interrelated and contribute to *symbolic capital* whose specific meaning, volume and composition indicates what counts more in a specific field.

Habitus is a system of durable *dispositions*, i.e., regularities in behaviour that stem from agents individual and/or collective educational, professional background and past socialisation, as well as from their institutional positions in the field. It is what individuals or collectives (Lenoir, 2006) want to do without clear rationale in order to take, or maintain, positions that are symbolically desirable in a field. What is symbolically desirable in a field at a particular time instance is defined by those who have positions of power in the field holding the appropriate forms of capital. By defining the rules of the game, they impose ‘*symbolic violence*’ on those that want to challenge the existing structure of the field (Bourdieu and Passeron, 1977). Although dispositions are somehow durable, they are shaped and reshaped through someone’s lived history. *Habitus* opposes the legacy of fully rational intentionality and self-agency that dominates entrepreneurship research, by assuming a bidirectional relation between agents’ *habitus* and the social field.

On the other hand, although Bourdieu (1977) does not seem to rule out purposive action, he overemphasises the normative logic of positions and the practical logic of dispositions undermining the strategic/rational logic of interactions (Mouzelis, 2008). The latter takes advantage of patterned relations among agents in a field/organisation beyond those due to institutional positions/roles, as well as of the specifics of particular situations. These figurational structures play a very important role in breaking the circle of social reproduction, especially when new players enter the field. New entrants can re-define the boundaries of the field and become the main forces of change (Bourdieu, 2001). This explains why frequently the boundaries of the field become a battleground in the interior of the field (Bourdieu, 2001).

In summary, social practices are the result of positional, dispositional, as well as figurational, structures in a field. Fields, in turn, are structured hierarchically and agency in higher fields is the result of practices determined by the structure and specific dynamics of lower level fields. This means that, for instance, to understand the behaviour of entrepreneurial teams or organisations in the field of technoentrepreneurship, one has to understand the internal organisational dynamics of these teams, or entrepreneurial schemes, i.e., how they are produced and reproduced. Based on the conceptualisation of organisations as non-homogeneous entities, where individuals and groups have their own interests, dispositions and strategies, academic ‘technology-firms-to-be’ teams can be viewed as fields of struggle too. For Bourdieu, the strategy and direction of organisations, including entrepreneurial teams, are guided by the conflictual relations among their members who have different interests bounded to the rules that they have adopted or assigned to Bourdieu (2005) and Swedberg (2011).

Based on the above theoretical insights, in the context of the process of academic entrepreneurship, the set of interrelated propositions that is explored in the following sections becomes:

P1: A research group may become an entrepreneurial team and eventually a spin-off venture by the initiation of a set of transitional activities which can lead to the expression of suppressed dispositions and figurations of its members, thus redefining the positional and dispositional structures of the group in a direction towards entrepreneurship.

P2: Transitional activities are easier to be initiated by new entrants in the group, who have different sets of dispositions and have the ability to form, in parallel to the institutional-positional, a figurational structure.

P3: As a reinforcing-dynamics-producing dialectic relation between structures and activity exists, transitional activities enrich the positional and dispositional structures of the team towards entrepreneurship.

4 Case study: the trajectory of a university spin-off from academia to the market

4.1 Methods and data collection

Case study with an ethnographic-like data gathering process (Nicolini, 2013) was employed in our research to investigate practices at *C.Lab*, a nascent entrepreneurial scheme in the Department of Informatics of a university in Western Greece. We observed, and carried out a longitudinal analysis of, the practices of the research group, from which the venture was being formed, from April 2011 until October 2017. The involvement in the specific case began as an exploratory challenge after a senior member of the research laboratory expressed to one of the authors of this paper the intention of the group to undertake entrepreneurship.

The development of the case study followed the methodological guidelines drawn by Bourdieu at three levels: construction of the research object, three-level field analysis, and participant objectification (Bourdieu and Wacquant, 1989). The construction of the research object concerns the perspective taken for the research/analysis of the field(s), i.e., in our case, the analysis of the academic field focused on the key researchers/academics as social agents. Similarly, the new technology-based firms (NTBFs) field was examined from the perspective of the key figures in entrepreneurial organisations. Once the research object was defined, three-level field analysis was carried out by analysing the position of each field of interest, i.e., in-group and inter-group in the academic and business fields – in relation to the field of power, mapping the objective structure of relations between the positions occupied by agents competing for legitimation and authority in the field(s), and analysing the habitus of the agents in the field. Participant objectification refers to the necessary *ex ante* and *ex post* reflection on the preoccupations of the researchers involved in the research. In both cases, researchers had neither any emotional or other attachments with the subjects, nor shared any financial, or other interests, with them.

In order to understand the background of the team and the contextual dynamics of the specific academic and business field, multiple data sources were used: recorded observations of various practices and interactions within the team (formal and informal meetings, focus groups, conference attendance, educational and networking activities, away days), in the university, in the wider academic field, and in the business field; ten in-depth interviews with members of the team and key agents from academia and the business field; various laboratory documents (research proposals, business plans and proposals, publications, university and national regulations); and paper and electronic documents regarding macro level economic and sociological attributes of the academic research and NTBF fields in Greece.

4.2 Data analysis

The analysis of the case involved three stages. In the first stage, after examining the main actors' in-group social positions, before, during, and after the transition period, towards the creation of the spin-off, the codification of the data according to the codes depicted in Tables 1 and 2 was carried out. The corresponding capital structures were evaluated with respect to the capital structures of the academic research and NTBF fields, respectively (Subsection 4.3). The coding of the actor's institutional and figurational capitals' endowments and accumulations were based on Bourdieu's analytic forms of capital (Gomez, 2015).

In the second stage, the dispositional and figurational structures of the group, before, during, and after the transitional period to spin-off creation were derived inductively from the data. The corresponding codes were developed taking into account related published work (e.g., Stewart et al., 2003; Backes-Gellner and Moog, 2013; Staniewski et al., 2016; Jeon, 2019). In the codes, the '*academic inwards looking*' and '*academic outwards looking*' dispositions denote the degree at which an academic researcher identifies almost unconsciously with his academic/research role/position and behaves accordingly. In the former case, the identification is extensive, whereas in the latter academic research is considered just as an occupation, limited in time and place, as far as everyday life is concerned. The '*scientific*' disposition describes someone that has the tendency to accept as true only something that is scientifically sound, while the '*inventor*' disposition characterises someone that is fascinated by the participation in the scientific/technology discovery process. On the other hand, the disposition to '*participate in business life*' describes someone that is attracted by the codes and rituals of conducting business and being associated with business peers. The '*entrepreneurial*' disposition describes someone that looks for opportunities to succeed and make money, and the '*techno-entrepreneur*' disposition the inclination of some well-trained individuals to equate proficiency in the development and use of technology with financial success. '*Autonomy*' ('being boss of myself') and '*risk-taking*' are two well-documented dispositions that characterise entrepreneurs in general (Ruef, 2010; Staniewski et al., 2016).

Table 1 Data structure for the academic research group before the transitional phase

<i>First order codes</i>	<i>Theoretical categories</i>	<i>Aggregate theoretical dimension</i>
Ability to obtain research grants	Economic capital	Position (institutional)
Access to research grants		
Authority in distributing financial resources to group members		
Diversity of relationships spanning intra- and inter-group boundaries	Social capital	Position (institutional)
Diversity of relationships beyond academia		
Knowledge of formal and informal rules in research project proposal submission	Organisational capital	Position (institutional)
Knowledge of formal and informal rules in research project management		
Formal (institutional) position – academic rank	Bureaucratic capital	Position (institutional)
Status in society beyond academia		
Formal education/training in relation to position held	Scientific/technical/ human capital	Position (institutional)
Experience in holding positions related to formal education training		
Privileged access to information/knowledge about research projects and their sources of financing	Informational capital	Position (institutional)
Socialisation primarily with academics	Academic inward	Disposition
Socialisation with non-academics	Academic outward	Disposition
Decision-making and behaviour based on scientific data	Scientist	Disposition
Discovery looking	Inventor	Disposition
Human capital developed from ‘personal’ research activities	Human capital (interactive)	Position (figurational)
Social capital developed from ‘personal’ (non-institutional) activities (clique forming)	Social capital (interactive)	Position (figurational)
Pursuing research and development	Research group activities	Practice
Involvement in writing proposals for research project financing	Research group activities	Practice
Writing scientific papers and reports	Research group activities	Practice
Making presentations in group meetings and conferences	Research group activities	Practice
Involvement in research project management	Research group activities	Practice
Collaboration with university/research institution administrators (finance, legal, etc.)	Research group activities	Practice

Table 2 Data structure for the transitional phase to spin-off creation

<i>First order codes</i>	<i>Theoretical categories</i>	<i>Aggregate theoretical dimension</i>
Ability to obtain venture financing	Economic capital	Position (institutional)
Authority in distributing financial resources to venture's team members		
Diversity of relationships spanning intra- and inter-team/venture boundaries	Social capital	Position (institutional)
Diversity of relationships with industry players		
Relationships with other actors in start-up clusters/ecosystems		
Participation in projects accomplished in the public and private sectors	Organisational capital	Position (institutional)
Institutional position in venture/spin-off	Bureaucratic capital	Position (institutional)
Status in society		
Formal education/training in entrepreneurship and business administration	Scientific/technical/human capital	Position (institutional)
Privileged access to information/knowledge about business opportunities	Informational capital	Position (institutional)
Socialisation with industry players	In business life	Disposition
Opportunity seeking	Entrepreneurial	Disposition
Working alone and getting results fast	Autonomy	Disposition
Willingness to leave secure jobs and invest time and money	Risk-taking propensity	Disposition
Strong believe that technology means money	Techno-entrepreneur	Disposition
Social capital developed from 'personal' (non-institutional) activities (clique forming)	Social capital (interactive)	Position (figurational)
Bureaucratic capital developed from 'personal' (non-institutional) activities and relationships	Bureaucratic capital (interactive)	Position (figurational)
Learning about markets of potential application of technology	Quasi-entrepreneurial team activities (transitional practices)	Practice
Monitoring the application domains of technologies related to the venture	Quasi-entrepreneurial team activities (transitional practices)	Practice
Meetings and presentations in companies	Quasi-entrepreneurial team activities (transitional practices)	Practice
Explicit consideration of cost, price and profit in the assessment of technologies and results of development	Quasi-entrepreneurial team activities (transitional practices)	Practice
Monitoring (transparent) activities and the performance of companies that are potential customers	Quasi-entrepreneurial team activities (transitional practices)	Practice

The academic research practices depicted in Table 1, ranging from the actual pursuing of research to research project administration, are typical in academic research settings and were observed in our field research. Transitional practices that are characterised as quasi-entrepreneurial team activities were developed inductively from the field research. In inductively developing codes, the fields of practice of academic research and NTBFs in Greece were also taken into account.

In the third stage, having in mind the stated set of propositions, and going back and forth between data and theory, we employed both inductive and deductive reasoning to develop an understanding of how the social reproduction dynamic of a research group is disrupted by extending its boundaries and by strategically inducing a set of transitional practices. In Section 5 we present the second order, group-level codes, in the temporal order in which they emerged in the case (Van de Ven, 2007). The description of the case depicted below follows the traces of activity of the main actors as they evolved over time. Neither comparative nor normative judgments with respect to the interrelationships between underlying structures and observed practices are made. Before that, a description of the context (social space), i.e., the fields of academic research and NTBFs in Greece, is made.

4.3 Empirical setting: the historical development and structure of academic and NTBF fields in Greece

4.3.1 The academic research field

A milestone in the development of the academic research field in Greece is 1981, when Greece joined the EEC and academic career paths were established for the then supporting academic personnel (assistants) in universities as a result of change in the basic organisational unit, from professorial chairs to research laboratories. European research funds started flowing in improving substantially the financial position of many Greek academics in technological fields. Given the backwardness of the local economy, however, research agendas and priorities were set by foreign partners and were out of pace with the needs of the local economic actors (Adamides, 2018). Consequently, universities and research institutes became a self-referring system (field) that reproduced itself, academics having very weak links with local business.

The practices of academics have been mainly driven by an ‘academic inwards looking’ disposition and the objective to gain reputation and power through their academic achievements. In Bourdieusian terms, research laboratories occupy positions in various fields (university, scientific discipline, national research/innovation system, etc.) according to their bundle of capitals. Symbolic capital and favourable field positions sought after are mainly associated with social and cultural capital substantiated as *organisational* (knowledge of procedures and rules and competency in their use/manipulation to face the domestic and European community bureaucracies and lobbies) and *informational* (privileged access to information and knowledge) forms of capital, as well as in instrumental and benefit-seeking relationships with other academics and powerful governmental officials (Pelagidis and Mitsopoulos, 2006). Until the beginning of the government debt crisis in 2010, economic capital per se was not a determinant of practices and was sought after by researchers mainly as a means to pursue research and accumulate technical and human capital that would bring more projects (‘scientific’ and ‘inventor’ dispositions). In the years of economic crisis, this has changed, and due to the

reductions in the already very low academic salaries, economic capital became a means of personal as well as institutional ‘survival’. However, financial capital was sought after mainly through participation in research programs and additional teaching. Academic entrepreneurship and spin-off creation has been viewed by senior academics only as a peripheral activity for attracting additional EU projects and funds by involving in programs ‘business’ entities they were associated with as users of research results.

4.3.2 *The field of NTBFs*

The entrepreneurship field of NTBFs in Greece can be considered as a subordinate of the broader historically-developed national economy field that carries the attributes of the peripheral European economies. In such fields, the technological dynamism of NTBFs is limited by the very large percentage of very small independent firms and the low volume of domestic demand for advanced technological products and services (Fontes, 1997). Hence, entrepreneurial schemes are relatively small, and, as far as information technology services are concerned, firms tend to participate in clusters and ecosystems. The low level demand by the domestic companies drives them to act as intermediaries, tailoring high-tech project results to the needs of local businesses, and makes them excessively dependent on government and the public sector (Milonas and Tzakou-Lambropoulou, 2016).

The field of NTBFs in Greece is receptive to teams of well-educated entrepreneurs that have dispositions towards facing challenges (‘risk-taking’ disposition) and obtaining financial gains (‘techno-entrepreneurship’ disposition) (Tsakanikas et al., 2017; Lasso et al., 2018). As the market for specialised innovations is rather small, favourable positions in the field are taken by those schemes offering to the public sector and large domestic firms services based on broad technical knowledge (Bathelt et al., 2010). This means that, in contrast to social capital that includes network nodes in the public sector/government, very specialised human (knowledge) capital is not valued very high in the NTBF field, unless it is accompanied by social capital involving individuals and organisations abroad. Over the last years, the NTBF field has been upgraded within the field of power of the domestic social space as it is explicitly supported by national economic policies. It is important to note that there are *homologies* (Bourdieu, 2005) in positions between the academic research and NTBF fields, as powerful academics with connections in government participate in decision making for the financing of NTBFs, promoting their own interests which are not necessarily in line with those of business.

4.4 *Description of the case*

From the early ‘80s, the *C.Lab* research laboratory was involved in a number of basic and applied research projects in the broad area of information systems administration and security. In parallel, it provided technical support to various local and national public and semi-public organisations. Over the years, there was a high turnover of graduate students and researchers in the lab, working in different EU-funded projects, but in the last decade, a core of eight PhD level software engineers/researchers formed a rather stable group. The leading figures of the lab were *John*, the professor head of the laboratory as academic unit, and *Mat*, the technical manager who had the responsibility for the management of projects and everyday operations.

By the end of the 2000s, the laboratory started focusing its research activity, and initially acquired, and then further developed, its distinct technical competences in the above areas. As a number of large complex ICT systems were installed and operating in the domestic economy, *Mat* started thinking more seriously an entrepreneurial future for the laboratory. The idea to formulate the technological resources of the laboratory into commercial software solutions and services has been in his mind since local ICT companies approached him to act as a technical consultant. Before moving to the university, *Mat* had a quite long work experience in the industry and links with ICT executives who were approaching him for consultation occasionally. After his involvement in these projects as consultant, he was gradually persuaded to exploit commercially the know-how of the research group. In this direction, he began to organise research results and competencies into modules, which could be easily adapted to the needs of specific markets and market segments. However, for him, there was always vagueness as far as business opportunities were concerned and a number of obstacles in their exploitation.

“First, there was the institutional and legal chaos. Second, the lack of a supportive innovation ecosystem for knowledge-intensive firms, especially in the initial stages of their creation, when resources are needed. Third, probably as a consequence, there was the attitude of fellow researches and colleagues in the lab; attitude of non-commitment, especially during the crisis, dropping any such idea; also, the non-supportive attitude of other academics that can be attributed to the jealousy that we were doing something of visible value. Fourth, there was the climate in the laboratory and its focus on academic excellence and publishing, rather than on communicating the innovative services in the ‘language’ of the market and adopting a cooperative stance against stakeholders in the business field. Finally, the economic crisis that has struck Greece rejected any thought for self-financing a spin-off or accessing funds, public or private.” (TM_i.8.22/3/2017)

Back in 2008, in the framework of a research project, the laboratory acquired knowledge and developed technologies and systems for highly complex systems administration, network conferencing, and the use of *ticketing* systems. Two years later, the laboratory was awarded a five-year IS security project by the Ministry of Defense. This, in addition to providing the opportunity for the laboratory to demonstrate its competency on the subject and achieve nationwide reputation, it became a trigger towards more intensive research in the above areas and for developing additional applied security systems technology and solutions.

At the end of 2013, in parallel with the involvement in the above project, the first actual attempt to form a spin-off venture was made. The opportunity was given by another large project of a major private healthcare organisation that was seeking expertise in IS security technology. The project involved many different partners with different specialisations and roles. There, *Mat* saw a chance to reach the market by forming a spin-off scheme that could exploit the competences of the group. *John* kept a passive attitude insisting in the academic direction of the lab, while other members of the group had a positive stance. Without formal legal status, more as a service provided by a university laboratory, the group started to be involved in an array of activities in the project, ranging from the development of the technical specifications to the construction of a prototype. However, the project did not have the expected success mainly due to the lack of financial resources, as some of the partners lost interest and withdrew. However, the

whole endeavour provided interesting lessons for the group as summarised in the testimony of *Pete*, a member of the group:

“It was like a test before getting into the market, and we learnt a lot from this failure. For the first time, we tried keeping strict time schedules – unconsciously, we adopted a more professional attitude. We also realized that there is a long distance between the scientific excellence standards and the real market needs. [...] We started using a practical problem-solving vocabulary rather than the usual market-detached technical language.” (P_SR5_i.1_22/2/15)

Nearly at the same time, *Stav*, a highly respected professor of the same university came close to the laboratory. *Stav* in addition to his academic activity in management information systems, maintained an extensive network of associates and friends who were key players at national and international levels (other academics, start-up owners, venture capitalists and other financing agents, as well as individuals in powerful positions in the public and private sectors). He was previously involved with two senior academics in a promising venture, which however failed due to disputes over leadership. Attracted by the reputation of lab and having appreciated its technological excellence, he contacted directly the technical manager, who knew before, about using *C.Lab*'s expertise in a large project he was discussing with a government agency. When *Mat* introduced him to the lab and his competence modules, *Stav* recalled cases where executives of public and private organisations were talking about problems they were experiencing with IS security. The know-how of the laboratory seemed very appropriate for developing solutions to these problems. He talked to *Mat* openly, and with his encouragement, he took a leadership role as an informal industry liaison/promotion manager. For the other members of the group, *Stav* brought to the group the ‘language’ of the market and triggered their interest.

“He reminded us things we knew, but we had sacrificed for the shake of the perfectionist and technically detailed point of view of engineers. We, as engineers, aim at solving problems in a technically optimal way; the solutions that the market needs are, however, simpler and mundane.” (TM_i.5.1/6/14)

Acting as a model, *Stav* started to gradually influence and change the daily work practices of the group. He introduced a more focused strategy for the application of technology and tried to link it with commercialisation activities. He became a mentor of the group, brought into the lab visitors from industry, and demonstrated a novel for the group way of thinking and interacting with business people. He also made unofficial organisational and operational modifications in the everyday life of the laboratory, putting an effort to balance academic excellence with business performance. In this direction, he introduced a practice of extensively documenting and classifying all the novelty produced in systems security (scholarly publications, technical documents) worldwide and, at the same time, promoted the sourcing of business-related information concerning the role of IS security in business transactions. He also initiated training in business concepts and introduced participative medium-term planning. The above activities were focused on the sectors of banking and healthcare, in which he already had some engagements. In addition, when engaging with business partners, efforts were made towards creating an identity distinct from that of the academic lab. In parallel, *Stav* continued to be associated with his formal academic unit which was developing custom executive decision support systems.

Six months later, after numerous discussions with *Mat*, having in mind the possibility of, and aiming at, forming a laboratory spin-off, *Stav* started to establish a set of additional *transitional work practices* that would facilitate the diffusion of the logic and culture of a high-tech start-up to the entire group. Over the period of a year (2015), he started implementing new work practices when he was arranging meetings with prospective clients: thorough preparation, previously discussed and well-prepared procedures for suggestions and discussions to find common ground and sign protocols of cooperation in view of conducting business later, as well as, formal procedures of concept proofing and prototyping after agreements or contracts were signed. The contacts with business were being carried out in a peer-to-peer logic: first there were meetings between technical staff for the technical specifications of the software/solutions or services, and then higher level executives and team members, respectively, were discussing financial issues and finalised the agreement. Assessment of the costs and risks of software development and service provision was introduced and was carried out before agreements. Gradually, in 2016, the networking activities were extended from local government and local companies to more important players, at the national and international levels, and the business operation of the nascent spin-off moved from Patras to Athens. In 2017, the growing networking activities resulted in new business opportunities and the need to increase the size of the team to cope with the prospect of additional workload. At the same time, a business plan was drafted. *Mat* summarised the experiences of this transformational period as:

“This was more than a test. It was learning by doing! A holistic transformation! Everything was changing and moving forward! This was a period that gradually changed my worldview and increased my confidence.” (TM_i.8.12/5/16)

The networking meetings and the signing of agreements eventually resulted in signing an important service provision contract with a private health services provider. By submitting its business plan as a spin-off venture, the team secured its first public-private funding for the development of systems security monitoring software. It has also begun developing prototypes of two more products for specific clients. At the time that this study was concluded (October 2017), the six-member laboratory team (not all members of the initial group participated in the venture) started to promote itself as an autonomous entity, detached from the university, having its technical operations close to the university and its commercial and main office in Athens. The organisational hierarchy and group structure that was responsible for this transition became the core structure of the new entrepreneurial team. *Stav* took the role of CEO, while *Mat* became CTO.

5 Analysis of the case

Our second order analysis and theorising for the roots of transformation of the research group into an entrepreneurial team is summarised in Table 3 and Figure 1. Rather than examining the evolution of each construct in its context individually, for the analysis of the case with respect to the proposition developed, we used the temporal perspective of the evolution of the *system* of constructs with respect to the main actors involved. The timeline of the case was organised into three phases. The first stage was until 2013, where the new addition to the group was made; the second, which constitutes the

transitional period to entrepreneurship, was between *Stav*'s introduction to the group and the signing of the first contract, (beginning of 2016), whereas the third, which is referred very briefly in the case study, was thereafter.

Table 3 The evolution of forms of capital, dispositions and figurations of the key actors in the case

<i>John</i>	<i>Mat</i>	<i>Others in group</i>	<i>Stav</i>
<i>2013 (research group)</i>			
<i>Positions (institutional)</i>			
Bureaucratic capital	Scientific/technical/ human capital	Scientific/technical/ human capital	
Economic capital	Social capital		
Scientific/technical/ human capital	Organisational capital		
<i>Dispositions</i>			
Academic inwards looking	Academic outwards looking	Academic inwards looking	
Scientist	Inventor	Scientist	
Inventor	Techno-entrepreneur		
<i>Figurational structure positions</i>			
	Human capital (interactive)		
	Social capital (interactive)		
<i>Practices</i>			
Research group activities	Research group activities	Research group activities	
<i>2017 (quasi-entrepreneurial team)</i>			
<i>Positions</i>			
	Scientific/technical/ human capital	Scientific/technical/ human capital	Economic capital
	Social capital		Scientific/technical/ human capital
	Organisational capital		Social capital
	Informational capital		Organisational capital
			Informational capital
<i>Dispositions</i>			
	Academic outwards looking	Techno-entrepreneur	In business life
	Inventor	Academic outwards looking	Techno-entrepreneur

Table 3 The evolution of forms of capital, dispositions and figurations of the key actors in the case (continued)

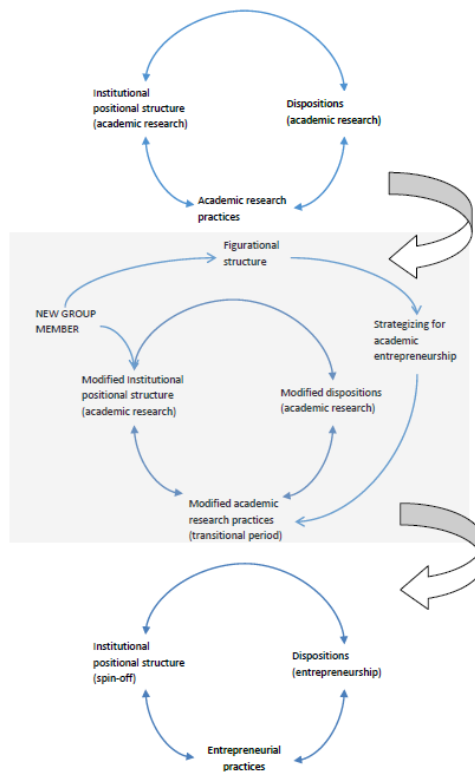
<i>John</i>	<i>Mat</i>	<i>Others in group</i>	<i>Stav</i>
<i>2017 (quasi-entrepreneurial team)</i>			
<i>Dispositions</i>			
	Techno-entrepreneur	Inventor	Academic outwards looking
	Entrepreneurial		
	Autonomy		
	Risk-taking propensity		
	In business life		
<i>Figurational structure positions</i>			
	Social capital (interactive)		Social capital (interactive)
			Bureaucratic capital (interactive)
<i>Practices</i>			
	Quasi-entrepreneurial team activities (transitional practices)	Quasi-entrepreneurial team activities (transitional practices)	Quasi-entrepreneurial team activities (transitional practices)

At the beginning of the transitional period, John, the assigned leader of the lab held bureaucratic capital as a result of his institutional position in the lab, in addition to scientific/technological capital that was the primary reason for occupying the specific position. This position endowed him with economic capital too, as he was controlling the distribution of financial resources of *C.Lab*. On the other hand, as *Mat* was carrying out the administrative load of the projects, was accumulating organisational capital, in addition to his scientific/technical one. In carrying out the administrative tasks, he had met various powerful professionals with some of whom maintained relationships, thus accumulating social capital. The other group members were PhD level researchers that held and were accumulating scientific/technical capital. The position of *John* in the field of the laboratory and the structure of his capital cultivated a set of dispositions towards preserving and strengthening the academic research orientation of the group. His habitus, consisting of the ‘academic inwards looking’, ‘scientific’ and ‘inventor’ dispositions, reinforced his practices towards accumulating more of the same sorts of capital. The same was true for the rest of the members of the group, with the exception of *Mat*, whose capital structure and dispositions were different, as result of his history and extra-group activities, in which he was associated with non-academic business professionals. The development of his ‘academic outwards looking’, ‘inventor’ and ‘techno-entrepreneur’ dispositions were partly result of his personal strategy and activities for developing entrepreneurial human and social capital. However, these were not part of the institutionalised practices of the research group. The practices of the group were those of academic research (see Table 1), dictated by the exercise of ‘symbolic violence’ by the head of the lab. Carrying out these practices the prevailing forms of capital and

dispositions were reinforced, resulting in the reproduction of the field as pure academic research group.

The change of *C.Lab* towards entrepreneurship was the result of the extension of the boundaries of its corresponding field and the parallel instantiation of a figurational structure based on the relationship of the newcomer professor with *Mat*. This extra-institutional structure ‘activated’ *Mat*’s dispositions towards change in the group-field to embrace entrepreneurship, and carry out, under the leadership of the new addition to the group, a number of transitional practices that eventually reinforced the entrepreneurship-oriented capitals and dispositions in the laboratory (middle of Figure 1).

Figure 1 The dynamics of change in the positions, dispositions and figuration of the academic research group towards entrepreneurship before, during and after the transitional phase (see online version for colours)



In exploring the case to provide explanations for academic entrepreneurship and spin-off creation, the nested structure of Bourdieusian fields was taken into account. The capital and habitus carried by the group members were not determined solely by their socialisation in the group. The surrounding academic and business contexts played an important role. It was evident that the whole effort to commercially exploit the knowledge generated within the specific academic unit was mainly undertaken by the technical manager of the laboratory (*Mat*) and was the result of purposive strategising. His dispositions and personal strategy towards entrepreneurship were not solely the result of his own history, position and prospects in the organisation which were limited. His socialisation through participation in national and international research projects, in

which he experienced the dynamics of the NTBFs' field and observed cases of successful academic entrepreneurship, played also an important role. In addition, the relatively weak position of the laboratory in the power structure of the specific university's field and in the general academic research field, mainly due to a lack of the necessary social capital, meant little prospects for new academic positions for *Mat* to apply for. However, given the economy in crisis, his dispositions towards entrepreneurship and risk taking were suppressed; surviving in the academic research field was his main objective.

Two forms of technical/scientific capital could be distinguished in the laboratory. On the one hand, specialised theoretically-grounded knowledge held by researchers who were involved in research projects. On the other, primarily held by *Mat*, more practical, tacit 'meta-knowledge' on how to navigate in, and exploit, specific pieces of research-project-generated technical knowledge into a compact homogeneous practical capability. As most projects concerned technologies for more advanced economies, the lab's visible scientific capabilities were somehow out of phase with those required for advantageous position taking in the local NTBF field, making the other members of *C.Lab* hesitant, as far as entrepreneurship was concerned.

The above two 'obstacles' to entrepreneurship were overcome by the introduction of a new member to the lab. This was not just an addition of a complementary resource, but proved to be catalytic in initiating the modification of the composition of the group's collective capital by supplying the forms of organisational and social capital that were valued highly in the NTBF field. His dispositions and figurations resulted in the initiation of a set of transitional learning activities (Blanco, 2007; Sanz-Velasco and Saemundsson, 2008) involving external business actors.

The social capital of the new team member was important for the legitimisation of the firm-to-be in the NTBF field, which in addition to technical capital, valued highly the maturity in interpersonal relations, necessary for participation in start-up clusters and other forms of business networks. In a different perspective, the addition of the new member made the collective capital of the group to be equally valuable across two institutional settings (fields) (Patel and Conklin, 2009; Terjesen and Elam, 2009): academic research and NTBF. Taking advantage of his relationship with *Mat* and by carrying out the set of transitional activities, *Stav* was able to modify the collective habitus of the group towards 'academic outwards looking' and 'techno-entrepreneur', and to initiate the commercialisation of the knowledge produced in the lab.

In summary, the case demonstrated the analytical power of 'enhanced' Bourdieu's relational approach towards *explaining* the roots of inertia and change in academic entrepreneurship, at individual and collective levels. More specifically, it provided an explanatory base for the propositions stated above by showing that:

- Academic spin-off creation by a group of researchers requires an escape from their everyday routine of academic research.
- This can take place in the pre-start-up phase by taking advantage of the dialectic relationship between everyday work practices and their generating positional and dispositional structures.
- Strategically inducing a set of appropriate *transitional practices* can lead to changes in the positional and dispositional structures of the research group, which in turn lead to novel practices, and so on.

- The strategic introduction of new practices and entrepreneurship-oriented positions and dispositions to the field of the research group, which are resonant with those of the NTBF field, is facilitated by the extension of the boundaries of the group through new member addition(s).
- The introduction of transitional practices creates a reinforcing dynamic that breaks the circle of social reproduction of the group as an academic research unit and positions it as a spin-off venture in the field of NTBF.

6 Conclusions and implications of the research

So far, research on academic entrepreneurship described the phenomenon of start-up creation and arrived at contingencies with pull and push factors that enable or hinder this process. Moving in a different direction, in this paper, our research objective was to investigate and ground in social theory the underlying mechanisms lead the transformation of a university research group into an entrepreneurial team. In this direction, this study, first of all, contributes to the micro-level organisational view of entrepreneurial phenomena through the logic of everyday life (social) practices. This perspective moves the thinking on individuals' activity away from the dominant paradigm of revealing the personal and environmental traits responsible for the heroic activities of an entrepreneur, or a group of entrepreneurs, to the underlying macro and micro *social* factors that generate practices. In a social practice perspective, academic entrepreneurship is synonymous to generating new work meaning and objective(s), and transforming work practices to be consistent with these objectives and their context. This may be spontaneous and easy to do in some national economies, but in others it may need to overcome important social, cognitive and behavioural obstacles. In the paper, we have used Bourdieu's theoretical framework and the associated research approach to explain how the underlying positional, dispositional and figurational structures and mechanisms can lead this transformation in a setting where these obstacles exist.

Our work showed that there are academic research groups in technological fields with a market potential, which are fluid ensembles of dispositions and various forms of capital, and which through the adoption of appropriate sets of practices can gradually develop the necessary for entrepreneurship positional and dispositional structures. In our case, it was shown that this process can be initiated by the addition of a new team member who can more easily strategically introduce new habits and facilitate the expression of suppressed dispositions. Obviously, it is the pre-existence of such dispositions in suppressed form that makes possible their later expression in a relatively short period of time, as a result of transformational practices.

Beyond the boundaries of the entrepreneurial teams, understanding the role of dispositions and capital in entrepreneurial practices could facilitate external consultants in their effort to guide academic entrepreneurial teams towards coherent and productive formations. From the point of view of investors, in particular venture capitalists, the identification of the existence of business attitude/disposition in an entrepreneurial team and the appropriate capital composition could be a positive factor against the risks associated with investing in the venture. In the same context investors are more likely to assess positively the composition of an initial entrepreneurial team that has a balanced managerial/scientific profile, since conflicts are unlikely to happen. Finally, the

awareness of the role of transitional practices in activating underlying dispositions for entrepreneurship could advance the support services offered by various institutional schemes (technology transfer offices, entrepreneurship support agencies, etc.), or consultancies, to academic entrepreneurial schemes.

As it has been already indicated, the research reported in this paper concerned a facet of academic entrepreneurship, expressed in the creation of a spin-off venture, in a specific context, in a specific time frame. In addition, the research was clearly focused in a specific phase of the entrepreneurship process, the pre-start-up phase. Hence, findings can be considered *fully* generalised only for *similar* cases. However, the grounding of the research and its findings in a concrete social theory provides a generic analytical framework, which can be easily contextualised in specific situations for understanding – not just describing – academic entrepreneurship and entrepreneurship in general.

Acknowledgements

This research has been co-financed by the European Union (European Social Fund – ESF) and Greek national funds through the Operational Program ‘Education and Lifelong Learning’ of the National Strategic Reference Framework (NSRF) – Research Funding Program: Heraclitus II: investing in knowledge society through the European Social Fund.

The authors would like to thank the two anonymous referees for their comments that contributed to the substantial improvement of the paper.

References

- Adamides, E.D. (2018) ‘Critical realism in the analysis of national innovation systems’, in Vliamos, S. and Zouboulakis, M.S. (Eds.): *Institutionalist Perspectives on Development: A Multidisciplinary Approach*, pp.105–124, Palgrave Macmillan, Cham, Switzerland.
- Anderson, A.R., Dodd, S.D. and Jack, S. (2010) ‘Network practices and entrepreneurial growth’, *Scandinavian Journal of Management*, Vol. 26, No. 2, pp.121–133.
- Backes-Gellner, U. and Moog, P. (2013) ‘The disposition to become an entrepreneur and the jacks-of-all-trades in social and human capital’, *The Journal of Socio-Economics*, Vol. 47, pp.55–72.
- Bathelt, H., Kogler, D.F. and Munro, A.K. (2010) ‘A knowledge-based typology of university spin-offs in the context of regional economic development’, *Technovation*, Vol. 30, No. 9, pp.519–532.
- Beibst, G. and Lautenschlager, A. (2004) ‘Determinants of regional high-tech growth by university-based startups’, in Dowling, M., Schmude, J. and zu Knyphausen-Aufsess, D. (Eds.): *Advances in Interdisciplinary European Entrepreneurship Research*, pp.45–56, Lit Verlag, Hamburg.
- Bessi re, V., Gomez-Breyse, M., Messeghem, K., Ramarosan, A. and Sammut, S. (2017) ‘Drivers of growth: the case of French academic spin-off’, *International Journal of Entrepreneurship and Innovation Management*, Vol. 21, Nos. 4–5, pp.318–342.
- Bicknell, A., Francis-Smythe, J. and Arthur, J. (2010) ‘Knowledge transfer: de-constructing the entrepreneurial academic’, *International Journal of Entrepreneurial Behavior and Research*, Vol. 16, No. 6, pp.485–501.

- Blanco, S. (2007) 'How techno-entrepreneurs build a potentially exciting future?', in Therin, F. (Ed.): *Handbook of Research on Techno-Entrepreneurship*, pp.3–25, Edward Elgar, Cheltenham.
- Bourdieu, P. (1977) *Outline of a Theory of Practice*, Cambridge University Press, Cambridge.
- Bourdieu, P. (1990) *The Logic of Practice*, Polity Press, Cambridge.
- Bourdieu, P. (2001) *Science de la Science et Réflexivité. Cours du Collège de France 2000–2001*, Editions Raisons d'Agir, Paris.
- Bourdieu, P. (2005) *The Social Structures of the Economy*, Polity Press, Cambridge.
- Bourdieu, P. and Passeron, J.-C. (1977) *Reproduction in Education, Society, Culture*, Sage, Beverly-Hills, CA.
- Bourdieu, P. and Wacquant, L. (1989) 'Towards a reflexive sociology: a workshop with Pierre Bourdieu', *Sociological Theory*, Vol. 7, No. 1, pp.26–63.
- Brennan, M.C. and McGowan, P. (2006) 'Academic entrepreneurship: an exploratory case study', *International Journal of Entrepreneurial Behavior & Research*, Vol. 12, No. 3, pp.144–164.
- Bruni, A., Gheradi, S. and Poggio, B. (2004) 'Entrepreneur-mentality, gender and the study of women entrepreneurs', *Journal of Organizational Change Management*, Vol. 17, No. 3, pp.256–268.
- Chen, M.-H., Chang, Y.-Y. and Chang, Y.-C. (2017) 'The trinity of entrepreneurial team dynamics: cognition, conflicts and cohesion', *International Journal of Entrepreneurial Behavior and Research*, Vol. 23, No. 6, pp.934–951.
- Clarysse, B. and Moray, N. (2004) 'A process study of entrepreneurial team formation: the case of a research based spin-off', *Journal of Business Venturing*, Vol. 19, No. 1, pp.55–79.
- Clarysse, B., Wright, M., Lockett, A., Van de Velde, E. and Vohora, A. (2005) 'Spinning out new ventures: a typology of incubation strategies from European research institutions', *Journal of Business Venturing*, Vol. 20, No. 2, pp.183–216.
- De Clercq, D. and Voronov, M. (2009) 'The role of domination in newcomers' legitimation as entrepreneurs', *Organization*, Vol. 16, No. 6, pp.799–827.
- Feldmann, B.D. (2014) 'Dissonance in the academy: the formation of the faculty entrepreneur', *International Journal of Entrepreneurial Behavior and Research*, Vol. 20, No. 5, pp.453–477.
- Fontes, M. (1997) 'Creation and development of new technology-based firms in peripheral economies', in Jones-Evans, D. and Klofsten, M. (Eds.): *Technology, Innovation and Entrepreneurship: The European Experience*, Palgrave Macmillan, New York.
- Forbes, D.P., Borchert, P.S., Zellmer-Bruhn, M.E. and Sapienza, H.J. (2006) 'Entrepreneurial team formation: an exploration of new member addition', *Entrepreneurship Theory and Practice*, Vol. 30, No. 2, pp.205–248.
- Forson, S., Özbilgin, M., Ozturk, M.B. and Tatli, A. (2014) 'Multi-level approaches to entrepreneurship and small business research – transcending dichotomies with Bourdieu', in Chell, E. and Karataş-Özkan, M. (Eds.): *Handbook of Research on Small Business and Entrepreneurship*, pp.54–69, Edward Elgar Publishing, Cheltenham.
- Franklin, S., Wright, M. and Lockett, A. (2001) 'Academic and surrogate entrepreneurs in university spin-out companies', *Journal of Technology Transfer*, Vol. 26, Nos. 1–2, pp.127–141.
- Gomez, M.-L. (2015) 'A Bourdieusian perspective on strategizing', in Golsorkhi, D., Rouleau, L., Seidl, D. and Vaara, E. (Eds.): *Cambridge Handbook of Strategy as Practice*, 2nd ed., pp.184–198, Cambridge University Press, Cambridge.
- Groen, A.J., Wakkee, I.A.M. and De Weerd-Nederhof, P.C. (2008) 'Managing tensions in high-tech start-up: an innovation journey in social system perspective', *International Small Business Journal*, Vol. 26, No. 1, pp.57–81.
- Gübeli, M.H. and Doloreux, D. (2005) 'An empirical study of university spin-off development', *European Journal of Innovation Management*, Vol. 8, No. 3, pp.269–282.

- Hambrick, D.C. and Mason, P.A. (1984) 'Upper echelons: the organisation as a reflection of its top managers', *The Academy of Management Review*, Vol. 9, No. 2, pp.193–206.
- Helm, R. and Mauroner, O. (2007) 'Success of research-based spin-offs, state-of-the-art and guidelines for further research', *Review Managerial Science*, Vol. 1, No. 2, pp.237–270.
- Hill, I. (2018) 'How did you get up and running? Taking a Bourdieuan perspective towards a framework for negotiating strategic fit', *Entrepreneurship & Regional Development*, Vol. 30, Nos. 5–6, pp.662–696.
- Hjorth, D. and Steyaert, C. (2003) 'Entrepreneurship beyond (a new) economy: creative swarms and pathological zones', in Steyaert, C. and Hjorth, D. (Eds.): *New Movements in Entrepreneurship*, pp.286–303, Edward Elgar, Cheltenham.
- Ikeatuegwu, C. and Dann, Z. (2016) 'Triple helix relations in innovation: conflicts, tensions, and struggles in rentier regions', in *Proceedings of 11th European Conference on Innovation and Entrepreneurship (ECIE 2016)*, pp.288–296.
- Jain, S., George, G. and Maltarich, M. (2009) 'Academics or entrepreneurs? Investigating role identity modification of university scientists involved in commercialization activity', *Research Policy*, Vol. 38, No. 6, pp.922–935.
- Jarzabkowski, P. (2005) *Strategy as Practice – An Activity-Based Approach*, Sage, London.
- Jeon, J. (2019) 'Rethinking scientific habitus: toward a theory of embodiment, institutions, and stratification of science', *Engaging Science, Technology, and Society*, Vol. 5, pp.160–172.
- Johannisson, B. (2011) 'Towards a practice theory of entrepreneuring', *Small Business Economics*, Vol. 36, No. 2, pp.135–150.
- Karfaki, E. and Adamides, E.D. (2016) 'Patterns of employment of Bourdieu's social practice theory in strategy as practice research', *International Journal of Strategic Change Management*, Vol. 7, No. 1, pp.1–22.
- Keating, A., Geiger, S. and McLoughlin, D. (2013) 'Riding the practice waves: social resourcing practices during new venture development', *Entrepreneurship Theory and Practice*, Vol. 38, No. 5, pp.1–29.
- Krabel, S. and Mueller, P. (2009) 'What drives scientists to start their own company? An empirical investigation of Max Planck Society scientists', *Research Policy*, Vol. 38, No. 6, pp.947–956.
- Kyriakidou, O. and Özbilgin, M. (2006) *Relational Perspectives in Organisational Studies*, Edward Elgar, Cheltenham.
- Lasso, S.V., Mainardes, E.W. and Motoki, F.Y.S. (2018) 'Types of technological entrepreneurs: a study in a large emerging economy', *Journal of Knowledge Economy*, Vol. 9, No. 2, pp.378–401.
- Lenoir, R. (2006) 'Scientific habitus: Pierre Bourdieu and the collective intellectual', *Theory, Culture & Society*, Vol. 23, No. 6, pp.25–34.
- Lockett, A., Currie, G., Finn, R., Martin, G. and Waring, J. (2014) 'The influence of social position on sensemaking about organizational change', *Academy of Management Journal*, Vol. 57, No. 4, pp.1102–1129.
- Lockett, A., Siegel, D., Wright, M. and Ensley, M.D. (2005) 'The creation of spin-off firms at public research institutions: managerial and policy implications', *Research Policy*, Vol. 34, No. 7, pp.981–993.
- Miller, K., Alexander, A., Cunningham, J.A. and Albats, E. (2018) 'Entrepreneurial academics and academic entrepreneurs: a systematic literature review', *International Journal of Technology Management*, Vol. 77, Nos. 1–3, pp.9–37.
- Milonas, P. and Tzakou-Lambropoulou, N. (2016) *Small and Medium Enterprises: Informatics Sector*, National Bank of Greece, Division of Economic Analysis, Athens.
- Miranda, F.J., Chamorro, A. and Rubio, S. (2017) 'Determinants of the intention to create a spin-off in Spanish universities', *International Journal of Entrepreneurship and Innovation Management*, Vol. 21, Nos. 4–5, pp.299–317.

- Mouzelis, N.P. (2008) *Modern and Postmodern Social Theorizing: Bridging the Divide*, Cambridge University Press, Cambridge.
- Ndonzuau, F.N., Pirnay, F. and Surlemont, B. (2002) 'A stage model of academic spin-off creation', *Technovation*, Vol. 22, No. 5, pp.281–289.
- Nicolini, D. (2013) *Practice Theory, Work and Organization: An Introduction*, Oxford University Press, Oxford.
- Patel, P.C. and Conklin, B. (2009) 'The balancing act: the role of transnational habitus and social networks in balancing transnational entrepreneurial activities', *Entrepreneurship Theory and Practice*, Vol. 33, No. 5, pp.1042–2587.
- Pelagidis, T. and Mitsopoulos, M. (2006) *Analysis of the Greek Economy: Rentism and Reforms*, in Greek, Papazisis, Athens.
- Riordan, C. (2000) 'Relational demography within groups: past developments, contradictions, and new directions', *Research in Personnel and Human Resources Management*, Vol. 19, pp.131–173.
- Ruef, M. (2010) *The Entrepreneurial Group: Social Identities, Relations, and Collective Action*, Princeton University Press, Oxford.
- Sanz-Velasco, S.A. and Saemundsson, R. (2008) 'Entrepreneurial learning in academic spin-offs: a business model perspective', *International Journal of Entrepreneurship and Innovation Management*, Vol. 8, No. 1, pp.15–35.
- Smilor, R.W. and Matthews, J. (2004) 'University venturing: technology transfer and commercialisation in higher education', *International Journal Technological Transfer and Commercialisation*, Vol. 3, No. 1, pp.111–128.
- Staniewski, M.W., Janowski, K. and Awruk, K. (2016) 'Entrepreneurial personality dispositions and selected indicators of company functioning', *Journal of Business Research*, Vol. 69, No. 5, pp.1939–1943.
- Steffensen, M., Rogers, E. and Speakman, K. (2000) 'Spin-offs from research centers at a research university', *Journal of Business Venturing*, Vol. 15, No. 1, pp.93–111.
- Stewart Jr., W.H., Carland, J.C., Carland, J.W., Watson, W.E. and Sweo, R. (2003) 'Entrepreneurial dispositions and goal orientations: a comparative exploration of United States and Russian entrepreneurs', *Journal of Small Business Management*, Vol. 4, No. 1, pp.27–46.
- Steyaert, C. (2007) 'Entrepreneurship' as a conceptual attractor? A review of process theories in 20 years of entrepreneurship studies', *Entrepreneurship & Regional Development*, Vol. 19, No. 6, pp.453–477.
- Swedberg, R. (2011) 'The economic sociologies of Pierre Bourdieu', *Cultural Sociology*, Vol. 5, No. 1, pp.67–82.
- Tatli, A., Vassilopoulou, J., Özbilgin, M., Forson, C. and Slutskaya, N. (2014) 'A Bourdieuan relational perspective for entrepreneurship research', *Journal of Small Business Management*, Vol. 52, No. 4, pp.615–632.
- Terjesen, S. and Elam, A.B. (2009) 'Transnational entrepreneurs' venture internationalization strategies: a practice theory approach', *Entrepreneurship Theory and Practice*, Vol. 33, No. 5, pp.1093–1120.
- Thibaut, J. and Kelly, H. (1959) *The Social Psychology of Groups*, John Wiley, New York.
- Tsakanikas, A., Giotopoulos, I., Stavriaki, S. and Valavanioti, E. (2017) *Annual Review of Entrepreneurship, Global Entrepreneurship Monitor, Foundation for Economic & Industrial Research*, Athens.
- Tsoukas, H. (1996) 'The firm as a distributed knowledge system: a constructionist approach', *Strategic Management Journal*, Winter Special Issue, Vol. 17, pp.11–25.
- Van de Ven, A.H. (2007) *Engaged Scholarship: A Guide for Organizational and Social Research*, Oxford University Press, Oxford.

- Vanaelst, I., Clarysse, B., Wright, M., Lockett, A., Moray, N. and S'Jegers, R. (2006) 'Entrepreneurial team development in academic spinouts: an examination of team heterogeneity', *Entrepreneurship Theory and Practice*, Vol. 30, No. 2, pp.249–271.
- Venturini, K. and Verbano, C. (2017) 'Open innovation in the public sector: resources and performance of research-based spin-offs', *Business Process Management Journal*, Vol. 23, No. 6, pp.1337–1358.
- Vohora, A., Wright, M. and Lockett, A. (2004) 'Critical junctures in the development of university high-tech spinout companies', *Research Policy*, Vol. 33, No. 1, pp.147–175.
- Wadeson, N. (2008) 'Cognitive aspects of entrepreneurship: decision-making and attitudes to risk', in Basu, A., Casson, M., Wadeson, N. and Yeung B. (Eds.): *The Oxford Handbook of Entrepreneurship*, pp.91–113, Oxford University Press, Oxford.
- Yin, R.K. (1994) *Case Study Research: Design and Methods*, 2nd ed., Sage Publications, Thousand Oaks, CA.
- Zikic, J. and Ezzeden, S. (2015) 'Towards a more integrated view of entrepreneurial careers: qualitative investigation of three forms of career capital and their relationships among high tech entrepreneurs', *International Journal of Entrepreneurial Behavior & Research*, Vol. 21, No. 6, pp.756–777.