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## Academic entrepreneurship: work identity in contexts

Giulia Giunti<sup>a</sup> and Jo Duberley<sup>b</sup>

<sup>a</sup>School of Management, University of St Andrews, St Andrews, UK; <sup>b</sup>Department of Management, University of Birmingham, Birmingham, UK

### ABSTRACT

Through the qualitative analysis of 81 semi-structured interviews of academics from the STEM fields, working in UK, Australia, and Italy, we support and challenge the previous literature on academic entrepreneurship. On the one hand, our research supports previous studies which suggest that some academics find compatibility between their academic roles and forms of science commercialization and knowledge transfer. The findings suggest that such an alignment of roles takes place in contexts (disciplinary, proximal) which stimulate and support academic entrepreneurship. At the same time, we argue against of the idea of fusion of academic-entrepreneur role identity and we suggest whilst the two roles may coexist, they are separate, as the academic identity remains the central salient identity. Continuity of core academic values is linked to 'supranational' factors such as norms and values of the academic profession and of disciplinary fields, which influence perceptions of alignment or misalignment with various activities, including the entrepreneurial one. We offer a redefinition of academic entrepreneurship through the lens of social entrepreneurship which could constitute the bridge between two worlds which are typically considered difficult to connect.

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Academic entrepreneurship; work identity; cross-country; social entrepreneurship; identity work; qualitative analysis; context

## Introduction

Evidence shows an increasing level of entrepreneurial activity within universities in many countries (e.g. Hayter et al. 2018), generally defined as academic entrepreneurship (henceforth AE) (Siegel and Wright 2015). AE is an umbrella definition composed of formal entrepreneurial activities, such as patenting or developing a spin-off, and informal entrepreneurial activities, such as consulting or joint research with industrial partners (Klosfsten and Jones-Evans 2000). This trend has been connected to the third mission of academia, which encourages the translation of research findings into commercially viable outputs with a socio-economic impact (Nowotny, Scott, and Gibbons 2002). While some studies show the positive effects of AE in terms, for example, of access to research funding (e.g. D'Este and Patel 2007), critics argue that AE is causing academics to question their working practices as well as their individual sense of self at work. Scholars suggest that the diverging norms and values of science and business are forcing academics to renegotiate their identity (e.g. Chubb, Watermeyer, and Wakeling 2017). Studies show that the outcomes of this identity work can be multiple and multi-faceted, including the possibility of identity adaptation and integration of an entrepreneurial role (Duberley, Cohen, and Leeson 2007; Lam 2010), as well as unsettling 'identity misalignment' (Meek and Wood 2016, 1093).

**CONTACT** Giulia Giunti  [gg67@st-andrews.ac.uk](mailto:gg67@st-andrews.ac.uk)  School of Management, University of St Andrews, St Andrews, UK  
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Considering the expansion of AE in many countries, further knowledge about how academics negotiate the increasing pressure towards entrepreneurship is both valid and timely. Universities may risk losing investments in knowledge transfer and science commercialization activities (Clarysse, Tartari, and Salter 2011) if these are ultimately refracted and avoided by part of the academic population. Furthermore, the perceived sense of misalignment may create a cognitive dissonance (Festinger 1957) which may negatively impact on academics' working life, work satisfaction (Dugas et al. 2018), and wellbeing (Duening and Metzger 2017).

Drawing from previous evidence (e.g. Jain, George, and Maltarich 2009), in this paper we suggest that academics' willingness to participate in entrepreneurial activities involves a self-reflection on the perception they have of themselves at work; in other words, a reflection on their identity at work. There is recognition that 'identity and identification both have the potential to illuminate important processes in AE' (Balven et al. 2018, 32). This is because identification is a self-defining process through which the multiple roles individuals 'typically play in highly differentiated contemporary societies' (Stryker and Burke 2000, 284) assume meaning, and identities become 'primary sources of motivation for human behaviour' (Leitch and Harrison 2016, 177). Identification is, thus, a sense-making device, connected to values, norms, and stereotypes which the individual derives from various contexts, including the occupational, professional, and relational one, and through which individuals 'navigate their lives, work-wise or other' (Ashforth, Harrison, and Corley 2008, 334), and 'can affect behaviour' (Anderson, Warren, and Bensemman 2019, 1561). Drawing on Sveningssson and Alvesson (2003), we adopt the concept of *identity work* to refer to the processes of identification and de-identification individuals may undergo as they try to negotiate the various roles and identities they may assume. Central of the concept of identity work is the emphasis on 'activity', or 'doing' (Lepisto, Crosina, and Pratt 2015 15) that is the process of construction of identity – through developing, maintaining, or changing certain identity features – in relation to the stimuli from the surrounding contexts (Lepisto, Crosina, and Pratt 2015).

Contexts, or 'places' – borrowing from Anderson, Warren, and Bensemman (2019 1560) – are the spatial, institutional, and social environments in which people are embedded (Anderson, Warren, and Bensemman 2019; Korsgaard et al. 2022) that enable and/or constrain action, becoming 'part of the action' itself (Cohen and Duberley 2015, 190) providing sense of belonging, and meaning to our actions (Anderson, Warren, and Bensemman 2019). 'Places are where identity is enacted' (Anderson, Warren, and Bensemman 2019, 1560), constructed and reconstructed through the stimuli that contexts provide. These can be structural (deriving from the organizations and institutions surrounding individuals) which provide opportunities or constrain action, as well as symbolic or ideological (shared values and beliefs) which determine not only what is possible, but also what is legitimate or not in a certain context (Cohen and Duberley 2015).

Influential contexts for identity negotiation are for academics the profession, disciplinary fields, institutional arrangements (Ylijoki 2010) and national context (Karhunen, Olimpieva, and Hytti 2017). As highlighted by previous studies, such negotiation may result in a variety of balanced, complementary, or dissonant work identities, owing to the perceptions academics have of these contexts, as either compatible or contrasting. We believe that such tensions may be revealing of both identity work processes as well as entrepreneurship, and how the two may connect. Analysing identities and identity work of individuals as they approach entrepreneurial activities may, thus, provide significant insight about entrepreneurial (or not) behavioural outcomes (Anderson, Warren, and Bensemman 2019; Radu-Lefebvre et al. 2021).

While there are various definitions of identity, often depicted as 'self-schemas that capture features or attributes that individuals associate with themselves' (Dutton, Roberts, and Bednar 2010, 266), the present study focuses on a specific type of identity, i.e. work identity (Dutton, Roberts, and Bednar 2010), which is a 'person's work-related self-definition' (Ibarra 2007, 2). This focus on identity at work aims to give salience to those work-related contexts, such as occupational and organizational, which influence and define a self-conception at work (Degn 2018). For the study of academics, this lens may prove particularly insightful given the variety of work-related contexts, as

earlier reported, within which academics are *embedded* (Korsgaard et al. 2022), and which may make entrepreneurship particularly challenging.

By adopting a work identity lens, the present study therefore aims to answer the following questions: 'how do academics' identity at work and views on industry involvement shape their participation in entrepreneurial activities?' 'What is the role of context in this?'

Contextualizing identity work is thought to provide 'richer understanding of entrepreneurship itself' (Anderson, Warren, and Bensemann 2019, 1560) since people draw from 'places' to define themselves (ibid.). Furthermore, analysing entrepreneurship in a contextual fashion offers precious insight since context may provide resources and opportunities for entrepreneurship as well as boundaries (Welter 2011). A contextualized analysis is also in line with this study's focus on work identity which by definition is considered a 'dynamic construct' (Lieff et al. 2012, 208), influenced by cognitive, relational, and other domains such as occupational and organizational (Degn 2018).

In order to give salience to *contexts*, the present work has adopted a cross-country comparative overview, focusing on academics from three universities, located in the UK, Australia, and Italy. The specific focus on these universities is important as while they all are research-intensive institutions with some AE activities in place, the levels of advancement of AE activities and policies, support provided, and national contexts differ markedly. Previous studies show that this is an important element to take into consideration when studying AE, since it shapes the perceptions and meanings associated to both entrepreneurship and science (Karhunen, Olimpieva, and Hytti 2017). Furthermore, by including Australia and Italy, the study rectifies an over-focus on the U.S. and U.K. (Mathisen and Rasmussen 2019). In so doing, the study addresses the need to expand knowledge on the subjective experiences of academics, and how these may differ across countries, and their normative and institutional contexts. This has been highlighted as important in a small number of previous studies (Karhunen, Olimpieva, and Hytti 2017), but is rarely explored as the majority of studies focus on quantitative evidence, based on a single country (Hayter et al. 2018).

In line with these considerations, the present study has examined another important context for AE: disciplinary field. Specifically, it has focused on academics from STEM fields, for two reasons. These fields typically have strong ties and collaborations with industry and external organizations. At the same time, studies have identified divergencies within STEM disciplines in terms of frequency, modalities and type of activities with which academics engage in, due to issues such as the nature of the research (Abreu and Grinevich 2013) as well as values and norms towards openness or secrecy of discovery (Oliver and Sapir 2017). Therefore, focusing on a variety of STEM disciplines allows to capture micro-divergencies and to explore how the norms and values of the disciplinary field as well as the profession impact on academics' activities, and ultimately identity work.

In analysing the 'salient links' (Anderson, Warren, and Bensemann 2019, 1561) between identity and entrepreneurial behaviour, through the qualitative analysis of 81 semi-structured interviews of academics from the STEM fields, working in UK, Australia, and Italy, our findings suggest that AE is an individual choice 'made in contexts', and much have to do with how academics perceive of themselves at work. This is because surrounding contexts, or 'places' (Anderson et al. 2019), which for academics are the disciplinary field, the national and institutional context, and the profession, trigger identity work, in turn influencing academics' entrepreneurial behaviour, or constraining it. Further, we identified the ways in which these contexts can promote change and/or continuity of specific characteristics of academics' work identity, and in turn its potential permeability to new roles. We develop our main arguments around the following claims.

First, we claim that AE does not always correspond to a change which produces a 'mis-alignment', as some previous studies argue. We instead agree with that part of the literature (e.g. Duberley, Cohen, and Leeson 2007; Karhunen, Olimpieva, and Hytti 2017) that supports the idea of change in academics' work identity that produces an *alignment* and *complementary* amongst roles, traditional and new ones. Thank you to the cross-country analysis adopted, we were able to notice the significant role of contextual institutional policies in promoting change or hindering it. Specifically, our findings show that policies and initiatives towards AE, as those promoted in the UK, may support

the development of what previous studies (Duberley, Cohen, and Leeson 2007) have defined as 'entrepreneurial academics' (484) for whom science and business are compatible. Viceversa, findings from Australia, where the change towards AE was narrated as 'in-progress', and from Italy, where AE has a relatively shorter tradition, identity work is permeated of ambiguity and resistance to change. With this evidence we address the call made by previous studies (Karhunen, Olimpiva, and Hytti 2017) about extending empirical knowledge on the role of context in shaping academics' entrepreneurial identity, and specifically of institutional arrangements as key for identity work. We add to the literature an analysis of countries which have been seldom analysed before, and especially concurrently, thus providing novel insight, and enabling to notice the cross-country variation highlighted above, which in turn provided valuable insight as also later reported. We also contribute to the literature on general entrepreneurship which advocates for the analysis of entrepreneurship in contexts (Welter 2011), and through an identity lens, which also unfolds in 'places' (Anderson, Warren, and Bensemann 2019 1560).

We continue with the claim that AE does not always trigger an 'identity schism' (Winter 2009 121) suggesting the idea that AE is not always a fundamental change; for example in those contexts which traditionally promote academia-industry collaborations – such as in the applied sciences – the environment already supports the symbolic and structural elements for entrepreneurship. This evidence was ubiquitous across the universities we analysed, leading us to define disciplinary fields as 'supranational' elements or *places* (Miranda, Chamorro, and Rubio 2018, 1021) which contribute to academics' work identity configurations, promoting *continuity* of norms and practices. At the same time, where disciplinary fields are more oriented towards fundamental science this may trigger identity mis-alignment. With this evidence we contribute knowledge on the multi-faceted nature of both AE and academics' work identity as influenced by a multitude 'contexts' within which individuals are embedded (Korsgaard et al. 2022). We especially emphasize here the salient and persistent role of disciplinary fields in shaping academics' work identity, and the resulting need to consider differences across sub-populations of academics.

A final key finding of our study is the identification of a significant *continuity* in the academic profession itself regarding the traditional Mertonian norms and values (Merton, 1973) which seem to have survived the 'entrepreneurial wave' (Etzkowitz 2015, 9). As narrated by the vast majority of our interviewees across the three universities analysed, being an academic was experienced as a 'calling', underpinned by societal aims. Notably, these were also amongst the most frequently cited *motives* underpinning their entrepreneurial activities. In this, instead of seeing an obstacle for entrepreneurship – if conceived in more traditional, rational, and economic terms (Anderson 2015; Cunningham and Fraser 2022) – we see potential for an *alignment* between academia and entrepreneurship by reframing it under the lens of social entrepreneurship (Dees 1998). We conclude by arguing that to promote *alignment* between entrepreneurship and academia, consideration should be given to the specific and multiple contexts within which this link takes 'place' (Anderson, Warren, and Bensemann 2019 1559). In what follows, we first present the literature review and the theoretical framework, followed by the methodology and empirical analysis. The article continues with a discussion and conclusion and ends with considerations on the limitations of this study, and suggestions for future research directions.

### **Literature review and theoretical framework**

It has been argued that 'academic identity is at risk of a kind of existential unravelling' (Chubb, Watermeyer, and Wakeling 2017, 555), due to the introduction of the 'third mission' of academia. Academic identity is defined as the 'sense of self' academics develop during their career path in academia and which is influenced by the various *contexts* within which they are embedded. These are the disciplinary communities, the departments or university they are affiliated to, the national context, and profession itself, the values, norms, and practices of which are given meaning to, and become part of the identity of the academic. In defining academic identity, we agree with scholars

proposing a dynamic view of it, as an individual reflective account which is constructed and re-constructed under the influence of stimuli and changes at micro, meso, and macro levels (Henkel, 2005; Billot 2010).

Amongst the main arguments supporting the idea of an 'academic identity schism' (Winter 2009, 121) is the conceptualization of universities as 'value-laden institutions' (Scott, 2004, 439), the constitutional values of which include honesty, transparency, critical thinking, dedication, respect, dignity, ethics, intellectual freedom (Merton 1973; Fitzmaurice 2013). As a result, academics are described as having a 'valued self-identity' (Winter 2009, 122) incorporating those principles in their profession. This perspective of academic identity suggests that the integration of an entrepreneurial role may be challenging for some academics, since it entails integrating into their identity values and norms diverging from those typically underpinning the academic profession perceived as completely dedicated to science (Billot 2010).

Studies suggest that while some academics may perceive being 'entrepreneurial' as a threat to their academic identity, others consider academia-industry collaborations as 'logical and compatible with their academic role' (Lam 2010, 327). Taking an identity perspective, Jain, George, and Maltarich (2009) suggested that in order to navigate this dynamic and challenging scenario and accommodate these 'market-oriented' or 'entrepreneurial' requests some academics develop a hybrid identity, including a 'focal academic self and a secondary commercial persona' (929). To borrow Meek and Wood's (2016) terminology, this strategy is used to prevent or reduce a potential identity 'misalignments' and discomfort or 'cognitive dissonance' (1094) associated with it.

Along the same lines, Smith (2012), in a study on UK scientists, identified 'hybrid academic identities' (167). This is supported by the work of Lam (2010, 309) who recognized the presence of 'traditional hybrid' and 'entrepreneurial hybrid' scientists in addition to 'traditional' and 'entrepreneurial' scientists. These two sub-groups are characterized by a mixture of both traditional and entrepreneurial values reflecting the tensions and contradictions underlying the complexity of the discourse on the integration of science and business. Similarly, Gulbrandsen (2005), in a study of Norwegian academics, defined as 'liminal' (4) those who 'position themselves 'in-between' (1), 'the academic world, as conceived in traditional terms, and the 'business world'. Tensions underpinning 'in-between' positions emerged from his and other studies (e.g. Muhr et al. 2019) as, while liminality allows creative development of new, additional, and alternative selves, it can also foster a 'period of acute identity conflict' (Ibarra 2007, 23).

In summary, previous research on AE suggests that some academics, by altering their pre-existing work identity, may assume an 'entrepreneurial persona' (Muhr et al., 2019, 567), an additional 'self', which includes values and behaviours of entrepreneurship (Jain, George, and Maltarich 2009; Anderson and Warren, 2011), whilst others seem to occupy 'in-betweenness' states between 'old' and potential 'new selves' which can create discomfort and sense of identity ambiguity. Evidence also documents resistance to change, as evident in the 'traditional scientists' (Lam 2010, 317) and 'traditional academics' (Duberley, Cohen, and Leeson 2007, 484), found in previous studies. All these examples suggest a diverse scenario of scientists in the current Higher Education environment, who are trying to make sense of their changing working environment.

Drawing from this evidence, in this study we aim to shed light on how individual academics negotiate the pressures deriving from multiple surrounding sources – e.g. norms, values of the profession, of the institutional environment – and the extent to which these can converge into coherent work identity configurations or dissonant, and what in turn are the behavioural outcomes. In so doing, we draw on the concept of *identity work* as the mechanism of identity construction and reconstruction which individuals enact to deal with the 'on-going struggles around creating a sense of self' (Sveningsson and Alvesson 2003, 1164). Recent views on work identity analysed in entrepreneurial contexts suggest that 'work identity may be dynamically constructed and re-constructed' (Radu-Lefebvre et al. 2021, 1574) as individuals interact with various contexts – e.g. groups, institutional frameworks. In so doing, they may develop various, and sometimes contradictory, 'identity

positions' (Knox, Casulli, and MacLaren 2021, 5) to incorporate and reflect the complexity of the normative assumptions, scripts, and schemas of their surrounding environments.

In the field of AE, *salient* contexts are the profession, disciplinary fields, but also the institutional arrangements and national context, which, by interacting, shape the extent and the forms of *entrepreneurialism* in academia. Regarding the national and institutional contexts, for instance, evidence shows that while a trend towards entrepreneurship within academia has been reported in various countries (e.g. Walsh and Huang 2014; Hayter et al. 2018) differences in the way it has permeated and developed were also noticed. Scholars (Harley, Muller-Camen, and Collin 2004; Kaulisch and Enders 2005; Fini, Grimaldi, and Sobrero 2009) maintain that universities in different contexts may face different challenges in promoting AE, and thus similar pressures and trends may be refracted in diverging ways, due to country-level factors, such as institutional contingencies and local-context specificities (Grimaldi et al. 2011).

Karhunen, Olimpieva, and Hytti (2017), in a study on Finnish and Russian scientists-entrepreneur, show that the normative tradition of science as well as socio-economic and institutional assets of a country shape the perception academics have of both entrepreneurship and science. In countries such as Russia where the entrepreneurial university trend has a shorter history compared to Finland, scientists tend to narrate of themselves as primarily and *still* scientists, despite having moved into the commercial side of science, from which, thus, they somewhat try to distance. In contrast, their Finnish informants reported a sense of blurred scientists-entrepreneur identity, as a result of a re-structuring of their work identity through the stimuli of institutional arrangements and norms and values of a country with advanced level of innovation and a culture 'supportive for science-based entrepreneurship' (549).

This evidence can be situated within the National Innovation System framework (Lundvall et al. 2002). Within countries (Van Looy 2009) and regions (Brown 2016) universities play a significant role as innovation actors, by stimulating and fostering technology, knowledge advancements, and socio-economic growth. Yet, as this contribution to nations and regions is based on mutual interactions, what universities can do to innovatively support these contexts is ultimately influenced by the extent to which they are supported in this role, and what they can build upon within the contexts they are embedded in. Amongst the main issues affecting entrepreneurship, national contexts differ in terms of cultural orientations (Rauch et al. 2013), legislative frameworks, and reward and incentive systems (Van Looy 2009). Therefore, studying AE in a contextualized fashion result in an insightful lens on how various factors and their interactions shape AE as a phenomenon, and the formation – or not – of an academic-entrepreneur figure. This is also in line with the general literature on entrepreneurship which emphasizes the role of context within which individuals are embedded as significantly influential upon entrepreneurial attitudes and behaviours (Korsgaard et al. 2022), as well as in line with the work identity lens adopted in this study, ultimately a dynamic construct influenced by surrounding contexts.

In line with these considerations, the present study has adopted a cross-country comparative design, looking at academics working in three different universities, located, respectively, in the UK, Australia, and Italy. While three research-intensive universities were selected, each country differed in terms of orientation and development of AE. Specifically, the UK is at the forefront of AE, which initially evolved around the late 1980s, linked to socio-economic changes and an increasing focus on *impact*, knowledge transfer and accountability (Slaughter and Leslie 1997). In Australia, initiatives towards *impact* were discussed before the UK, but political instability and government change delayed the implementation of initiatives, putting Australia some years behind the UK in promotion of AE (Penfield et al. 2014). Finally, Italy significantly differs from both the UK and Australia in terms of how higher education is managed and initiatives promoting AE were implemented years after the UK and Australia (Rebora and Turri 2013), and concepts such as *impact* are still not particularly present in this context. These differences may shed light on the identity work of academics in different national and university contexts, as a dynamic negotiation of 'possible selves' (Muhr et al. 2019 567). which draw from culture, stereotypes, norms, and behaviours of local environments (Muhr et al. 2019).

Another important context in the study of AE is the disciplinary field. Scholars suggest that disciplinary communities act as 'tribes' (Ylijoki, 2000, 340; Ylijoki and Heriksson 2017, 1297) delineating legitimate behavioural scripts through the diffusion of specific 'in-group' norms, values, and practices (Ylijoki, 2000, 2003, Ylijoki and Heriksson 2017). Evidence shows that AE has indeed diffused differently across disciplines with STEM fields typically reporting high levels of entrepreneurial activities (e.g. D'Este and Patel 2007). This is due to the typical applied-orientation of much of the research in the various STEM areas that suits collaborations with industrial partners. Yet, within the STEM fields, differences are reported in terms of orientation of research as well as channels and modalities of AE (e.g. Lee 2019). In line with these considerations, the present study focuses on the experiences and perceptions of academics across various STEM fields, to capture divergencies and similarities that can reveal insight on how the discourse of science and business can be traced back to the norms, practices, and values diffused within specific 'tribes' (Ylijoki, 2000, 340; Ylijoki and Heriksson 2017, 1297), and thus the roles of these as influential contexts.

This focus wants to offer a contextualized analysis of AE, as a complex phenomenon, unfolding in a variety of levels, which dynamically interplay (Welter 2011), influencing trajectories, attitudes, and behaviours of the individual academics. This does not signify that academics are *determined* by these contexts; evidence – as earlier reported – suggests agency of individuals in negotiating these contextual inputs. What is under the lens here are the movements between the individual *within* his/her own contexts, and the identity work enacted to make sense of the professional, disciplinary, institutional environments within which academics work, and how this is related to academics' entrepreneurial behaviour.

The importance of studying academia lies in the key role universities, and thus academics, play in societies as knowledge creators and diffusors (e.g. Ylijoki 2010). As prototypical examples of knowledge intensive sectors, studying universities and those working within them may also shed light on how managerial decisions and changes in institutional logics affect work features as well as work experiences more broadly.

## Methodology

The study reports data from the second phase of a mixed-method study on AE. While the study was underpinned by an overarching focus on AE and the quantitative and the qualitative parts were connected, they were focused on 'different inquiry components' (Greene, Caracelli, and Graham 1989, 259). The first phase of the study was constituted by an online survey which gathered data about levels of entrepreneurial activity, demographic factors, and individual attitudes. Some of these aspects were used to select participants for semi-structured interviews, the second part. Specifically, the interviewees were purposefully selected following a *maximum variation strategy* (Patton 2015) according to: level of involvement in entrepreneurial activities, discipline, gender, and career stage. The interviews aimed at gathering insight on academics' subjective experiences in relation to engagement in entrepreneurial activities. Given the relative independence of the two components, the present study specifically focuses on the qualitative part.

A total of 81 interviews were conducted between 2015 and 2016 in three research-intensive universities: 23 from the UK, 32 from Australia, 26 from Italy. The three were selected as comparable cases considering their similarities in terms of ranking, reputation and orientation towards research and research quality. The focus on research-intensive universities enabled exploration of the dynamics and tensions experienced by research active academics. The inclusion of academics who had little or no entrepreneurial experience also allowed a deeper analysis of the mechanisms underpinning individual academics' involvement in AE and the negotiation strategies enacted to manage their work identity and any potential sense of mis-alignment.

At the same time, the three universities selected were also chosen due to the different national contexts in which they are located to shed light on the influence of national and institutional contexts upon academics' work identity configuration and re-configuration.



Data was collected through semi-structured, open-ended interviews to allow subjective meanings and experiences to be gathered (Kvale 2007), while covering in a systematic way a series of core themes which the study sought to explore. The interview guide included questions on academics' involvement (or not) in entrepreneurial activities, the rationales for their stance, and their opinions and personal positions in relation to the academia-industry interface. Further questions explored career interests, expectations, and future plans. The interview also investigated issues pertaining to the interviewees' proximal context (their department and university) and the national level, in terms of orientation towards entrepreneurship, and support provided. As the interview guide was originally developed in English, for the Italian sample the interview guide was translated (by one of the researchers, who is an Italian native speaker) and back-translated by a professional translator (English native speaker with proficiency in Italian) to ensure quality of the data collected (Brislin 1980). The two versions were then compared and discussed. No discrepancies were found.

Data collection started with the participants in the UK university, followed by the Australian and finally the Italian. Given the focus on cross-country and inter-groups comparisons, 5–30 interviewees per group was used as general reference for the sample size (Creswell 2013). The data collection stopped when a relatively balanced coverage of diversity criteria within the sample was achieved, and a balanced number of participants per university was reached, but also when recurrent themes started to appear in the initial analysis process, and further data was considered not essential (Dey 1999). This process was aided by the template development, which helped establish when recurrent themes were emerging, and new nodes were not needed; thus, the data collection could stop.

Interviews, which lasted between 30 and 75 minutes, were all recorded, transcribed verbatim and transferred into NVivo11, organized in three groups according to the university to which they referred, and coded thereafter using the software. Data were analysed using Template Analysis (TeA) (King 2004). The first template – an extract of which is reported in Figure 1s – is characterized by seven 1<sup>st</sup> order codes, subdivided into 2<sup>nd</sup> level order codes, deductively derived- i.e. *a priori*- from the interview guide, following one of the techniques of TeA. The template was then used to analyse various transcripts, starting with the UK sample, as to follow the data collection sequence. Through this process, new-inductively generated nodes were created, others eliminated, and some converted into a different level (King 2004; King and Brooks 2017). An extract of an evolved version of the template is reported in Figure 2s. To give an example of the codes – or nodes – development, the node 'Individual level of involvement in entrepreneurial activities' was a 1<sup>st</sup> order node in the initial template; then ramification in 2<sup>nd</sup> order nodes, to divide data between those participants with entrepreneurial experience (2.1) from those without (2.2) were created to capture potential differences and/or similarities between the two groups of participants. For each of these 2<sup>nd</sup> order nodes, various 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> order nodes were created, as can be seen in Figure 2s and Figure 3s, to capture further details. Amongst these, illustrative are the 5<sup>th</sup> order codes 'conflict for time and resources' and 'conflict of interest' (in Figure 3s). These were created to differentiate between practical difficulties relating to AE, as experienced by various interviewees (2.1.1.5.1), from 'conflict of interest' which refers to the tensions between science and business (2.1.1.5.2). These two nodes refer to two aggregate/conceptual themes, which were then developed: 'practical issues' and 'symbolic issues' underpinning AE.

In summary, the analytical process followed a process of macro-micro-macro, where initial *a priori* codes – relating to macro areas investigated – were applied to the transcripts, which led to the development of further (micro) more detailed codes. These subsequently revealed macro/conceptual themes (King and Brooks 2017). The final template in English was used to start the analysis of the Australian sample, followed by the Italian transcripts, after back-translation.

## Findings

The qualitative analysis led to the development of various categories of academics based on their opinions about academia-industry collaborations and knowledge transfer activities, and how they

saw themselves in relation to the interplay between academia and industry and external organizations more generally. We acknowledge that this process is not neat, as for some individuals, categorization within more than one group is possible, but a dominant alignment was possible in all cases thereby confirming the utility of the categorizations. The names of the categories were often derived from the participants' descriptions, as they appeared evocative of categories' key issues. The first typologies described comprise academics with varying degrees of entrepreneurial experience, classified as: *'Integrated entrepreneurial'*, and the *'Mixed and Instrumental'*. Other two categories include those academics with no entrepreneurial experience; also within this macro group, differences were found, and thus participants were categorized accordingly as *'Curious'* and *'Reluctant'*. Participants are identified with a different letter corresponding to their respective university: B for the UK university, A for the Australian university, and P for the Italian university. Tables in supplementary material provide an overview of the categories.

### ***'Integrated entrepreneurial'***

The first group, the *'Integrated entrepreneurial'*, comprises all those academics with a wide range of experience of entrepreneurial activities (such as patenting, setting up a spin-off, consulting, contract research), with both the private and public sector. Motivations for entrepreneurial activities included the possibility to translate research into beneficial societal outcomes, to make research more real-world oriented as well as gaining funding for research. Academics in this group shared similarities in terms of preference for an academic career since it allows a certain degree of freedom, both intellectual as well as in terms of work management; freedoms described as 'priceless' (P5); yet, participants maintained a strong connection with industry.

It would be tempting to align all these interviewees with the 'entrepreneurial academics' portrayed in other studies. While indeed similarities were noticed, as ultimately these are academics for whom science and business are 'compatible' (Duberley, Cohen, and Leeson 2007, 487), some differences in this macro group were noticed. Specifically, one sub-group (*a*) of these entrepreneurial profiles seemed to epitomize the idea of change towards an entrepreneurial trend in academia. These were academics who expressed a strong curiosity for the 'business part' of science (B6), and an interest in being entrepreneurial driven by some career-related motifs:

career wise I've brought last year 1 million pounds to the University, there was a contract, so obviously

that it's the equivalent of a grant, of a big program grant, so career wise this is extremely successful for me. (B8)

This interviewee continued explaining that thanks to this entrepreneurial activity she would have received a permanent position, and a leading role. Notably, this academic was relatively junior and coming from Health Sciences, which can be a challenging 'territory' (Ylijoki and Heriksson 2017, 1298) for AE, as will be discussed later. We can see, thus, that not only there are various contexts influencing AE but these interplay (Welter 2011), and shape various identity works and entrepreneurial behaviour (Radu-Lefebvre et al. 2021).

The important role of recognition of AE for career advancements was corroborated by another interviewee from the UK, B23, who explained that 'my career came from being able to collaborate with these outside organizations and industries', adding that the concept of *impact* is now explicitly present in the university statutory, encouraging academics to be involved in industry collaborations. This, thus, seemed to have influenced a willingness to crossing the boundaries of academia and industry and undergoing an identity process to develop what Jain, George, and Maltarich (2009) defined as 'secondary commercial persona' (923). As in their study, we noticed that while undergoing an identity work leading to new roles being incorporated, this did not mean giving up their academic roles, and ultimately identity, but rather combine the two. As reported by B23: 'I feel I belong in academia, but I am entrepreneurial'. Their work identity was thus hierarchically constructed, and the 'entrepreneurial self', was 'secondary', albeit harmoniously integrated.

Notably, narratives of specific career wise benefits for entrepreneurial activities were more evident amongst some of the UK interviewees, compared to the interviewees from the other countries. These were academics who expressed a sense of perceived change in their profession, where entrepreneurial activities and knowledge transfer were seen as complementary and integrated with their other activities and roles; such change was somewhat externally driven by top-down stimuli deriving from the national context and the specific university context they were embedded in. This evidence corroborates other cross-country studies which show the role of national contexts' institutional arrangements as well as cultural orientation towards science and business in shaping academics' opinions and propensity of embracing an entrepreneurial role (Karhunen, Olimpieva, and Hytti 2017). The others in sub-group *a*, from Italy and one from Australia, talked more of personal interests towards entrepreneurship, being a senior (an Italian interviewee) as well as their involvement in applied research as facilitators of AE; the latter was a dominant theme also for those in subgroup *b*.

For the interviewees in sub-group (*b*) – identified amongst the 'integrated entrepreneurial'- the sense of alignment and integration between academia-industry collaborations and their work identity was evident; however, these interviewees less emphasized the idea of entrepreneurialism as a 'new trend' within academia; for them, translating, commercializing research, and establishing collaborations with industrial partners is and will always be a 'constant' (B19). In other words, what emerged from their narratives was a natural and long-standing 'openness' towards academic-industry collaborations, mainly underpinned by their disciplinary field – often but not only Engineering – as well as the applied nature of the research they were involved in. These were academics who saw themselves as mediators or translators of 'information from industry in to academia, from academia in to industry' (B21). Their work identity did not seem, thus, to have undergone identity work, as result of the increased entrepreneurialism within universities; instead, they seemed to already possess an *applied persona* in their 'central, valued, and salient [professional] self' (Ashforth and Humphrey 1993, 99), as developed within a disciplinary community (Ylijoki and Henriksson 2017) the norms, values, and practices of included academia-industry collaborations:

It's all part of the same job really. (A10)

I do already do a lot of work with industry, so in a way, for me, it's no change. I just keep doing what I've been doing (A10).

Interestingly, around half of the Australians and half of those from the UK in this sub-group (less from Italy) had previous or concurrent work experience outside academia. This work experience may have fostered a perception of 'boundarylessness' between academia and the outside world (Baruch and Hall 2004) which facilitated their involvement in entrepreneurial activities (Tartari, Salter, and D'Este 2012). Some of the Australians in this group linked their research as being applied to national context's environmental issues (e.g. environment conservation, or issues affecting remote geographical areas and aboriginal communities) which they wanted to address, also in line with a perceived societal ethos underpinning their academic work.

I have a view that we should all try and make the world a better place. I'm an academic. We have lots of skills and expertise that can actually support their research programmes. (A5)

Similarly, another Australian participant, while enjoying working at the university, was planning to continue his consulting activities outside university since the latter was making entrepreneurship difficult, especially in terms of administrative issues.

I'm at a bit of a crossroads right now. It's most likely that I will leave the university and become an entrepreneur! (. . .) I just/I'm like a consultant here. I just may as well become my own consultant. (A6)

This is an interesting finding, as it signals that, while academia is a preferred career choice, there is presence of entrepreneurial tendencies among academics, including junior staff, as A6 above cited, particularly if working on socially-oriented research, such as environmental issues, as in the case of

A6. This may provide further support to the idea of expanding the association of entrepreneurship from the private and business sector to social entrepreneurship (Dees 1998), which may align better with some academics' interests. In some cases, this societal ethos is also triggered by features of the national context which may influence entrepreneurship in academia, or hinder it. An issue that will be returned to later.

### **Mixed and instrumental**

The key aspect of this group is the co-presence in the narratives of concerns about academia-industry collaborations mixed with considerations of enjoyable aspects. AE was seen as interesting, and fruitful for their research, but at the same time 'dangerous' and 'short-sighted' (A2). Those from Health Sciences expressed concern about the potential clash between the norms of science and business. As reported by B4:

Well, the drawback is the potential/the potential conflicts of interest, so if you're perceived as doing work with these companies and publishing and presenting, you know, people will just say, yes, they're/he's just presenting what the company wants him to present.

A similar discipline-related issue was mentioned amongst some from Physics, especially if involved in fundamental-oriented research. As explained by B13:

I think it's actually quite divisive as well, the fact that you might/that your colleague might think that you are going to earn money above and beyond what you ought to be earning, I think is a bit divisive actually and secretive as well, you know.

This evidence reinforces the idea that disciplinary communities act as 'tribes' (Ylijoki, 2000 340; Ylijoki and Heriksson 2017 1297) the norms and values of need to be embraced to remain member of the community.

Two UK interviewees described failed experiences with industrial collaborations which appeared to have significantly impacted on their willingness to approach such activities, despite some envisaged benefits. Interestingly, the difficulties came from industry, described as inefficient on issues such as providing 'confidentiality disclosure agreement and all this kind of stuff' (B17). Others, both in the UK and Australia, lamented their 'unpreparedness' for entrepreneurship, as they were 'asked to do a job they don't know how to do' (A2).

Another key aspect was the concern around the recognition for entrepreneurial activities, which was creating what one junior academic described as 'a very uncomfortable relationship between entrepreneurship and academia' (A21). This junior academic highlighted the sense of *change in progress* Australia was experiencing (at the time of the interview) in relation to AE, which while on the one hand Australian universities were 'starting to realize "oh this can actually be valuable"', referring to AE, on the other "'we don't know how to deal with it and we don't know how to count it and our metrics are not set up for this"' (A21). It is clear that recognition, along with support, are key aspects for academics, especially at early career stages when academics not only may lack industry contacts and 'preparedness' for it – as also this interviewee confirmed – but their evaluation of time allocation at work is more carefully conducted than at other career stages. If policymakers and universities wish to foster AE, reward, recognition, and workload re-framing are amongst the steps to undertake.

Another interesting aspect of the Australian context is the sense of societal contribution, especially towards their national context, this group articulated, ultimately expressed by other Australian scientists discussed in relation to the previous group. Notably, A26 suggested that this societal ethos can be realized more easily within an academic environment:

For instance, I really enjoy working in the central part of Australia with water resource issues and within academia I've got the opportunity to work in that area more than, for instance, if I was working in a government organisation or within a consultancy.

These academics shared views of their profession as mainly dedicated to science, almost as a calling. This perception, often linked to disciplinary norms and norms of the profession which had not yet been strongly imbued of entrepreneurial ethos, stimulated various negotiation strategies of their core work identity (Settles 2004) which was still infused of traditional values. One of these strategies involved adopting a 'cynical' (B13) attitude towards AE, justified in instrumental terms as for the 'money, the possibility of having access to laboratories, no matter the cost' (P3). An instrumental view was also shared by others, specifically two junior academics, one in Australia and one from the UK, who mentioned that they were 'strategically' (A12) using academia-industry collaborations to bridge with industry where they will 'end up working sooner rather than later' (A12), due to precarious working conditions in academia.

Another mechanism to protect their core academic identity was the limitation of the amount of time dedicated to knowledge transfer activities and industry collaborations, thus limiting the risk of being absorbed (P23) by tasks not in line with their core work identity (Settles 2004).

Some of these interviewees, also expressed forms of organizational identification, to reinforce their membership to a specific context and its traditional values (academia, and the norms of science); in so doing, justifying their involvement in entrepreneurial activities as a response to requests from the organization they identified with and worked for; thus, doing something in line with 'who they were'. As A30 comments: 'I am an academic. That's it. I do/the university employs me as an academic and I do things that's of particular needs, but I am living in this organization'. Such a process of organizational identification – the perception of 'oneness with the organization' (Ashforth, Harrison, and Corley 2008, 333) appeared as a strategy to define the boundaries of territories which provide scripts of legitimate behaviours.

From a work identity perspective, it was challenging to categorize these interviewees. Some appeared to retain their primary academic identity and seemed unwilling to modify it, using the strategies discussed above to distance oneself from normative pressures with which they did not agree (Fleming and Sturdy 2009). Others talked of themselves as being 'in the middle' (A2) between academia and industry, but with strong tensions to manage. In this respect, they resembled the 'liminal' academics described by Gulbrandsen (2005, 4), and the 'hybrids' of Lam (2010) who 'appear to adopt contradictory positions and express paradoxical views about the nature of the relationship between science and business' (317). It is worth mentioning that tensions characterized every group, but they appeared particularly evident in the narratives of those allocated in this group.

### ***The non-entrepreneurial: Curious and Reluctant***

These last two categories include those interviewees without entrepreneurial experience. We divide them in two groups as whilst there are similarities there are also key distinguishing features. Both the groups include participants from the three countries analysed, and discipline emerged as one of the main barriers for AE in both groups. For example, P9, in the *Curious*, talked about 'differences across disciplines' stressing the intrinsically applied nature of some fields such as Engineering versus others such as Maths or Physics, where 'there's no tradition' because of the 'fundamental' nature of research. Therefore, 'in Physics that doesn't happen that much, it's not like it's really part of the culture' (B14). Similar narratives emerged from the *Reluctant* academics, not only from Physics but also Health Sciences. For example, P26 explained that there is a very little opportunity to do 'not for profit' research with industry, since the scientific interest 'may not necessarily correspond to/with the interest of the pharmaceutical industry'.

Along with discipline, another significant context impacting upon work identity configurations seemed to be the national one; thus, providing support to previous cross-country studies (Karhunen, Olimpieva, and Hytti 2017). An illustrative example is P21, a post-doc from Italy who is categorized amongst the *Reluctant* interviewees. Like a number of others from the same university, he felt that the less applied nature of research in the Italian context leads to scarce 'attention to these things'. University and industry in Italy were described as 'two worlds that do not communicate', and his

narrative was imbued with a strong reluctance about this new entrepreneurial model of university 'which does not make any sense', and what lacks is the 'spirit of university'. Notably, this finding echoes Cunningham and Fraser's (2022) study, where Italian interviewees described the Italian university system as theory-oriented rather than applicative, and where the national's image of the entrepreneurship is imbued of sense of 'selfish-ness' and individualism, thus creating a social barrier to entrepreneurship since negatively perceived.

Another common feature across the two groups was a strong attachment to an academic career; for instance A16, a post-doc amongst the *Curious*, commented: 'I want to stay in science. That's what I love to do and that's what I'm trained to do'. Overlapping narratives also emerged from the senior interviewees in this group, and those of the *Reluctant* academics. For example, A32 reported that since he 'was eighteen' he wanted to have an academic career, described as 'ideal career', where they could have 'the freedom such as of/within certain limits to study what interests me' (P21), to dedicate one's working time to academic research which was seen as having 'lasting value' (B18).

Yet, while the *Reluctant* interviewees seemed to resemble profiles of 'traditional' scientists reported in previous studies (Lam 2010, 309), who were trying to protect their traditional academic identities from 'new' stimuli, which were perceived as not aligned with their work identity, the *Curious* shared a different perspective on AE. For example, some senior staff amongst the *Curious* commented that their lack of involvement was not intentional, for example, 'it has never happened/ simply it has never happened to me the occasion, I wouldn't dislike it' (P15). This also emerged amongst some juniors in the same group, who however appeared trapped in the 'publish or perish' dilemma. When combined with belonging to a traditionally less applied field and coming from a country which is less entrepreneurial-oriented, it may significantly decrease the possibility for junior academics to have contact and experience with industrial partners. For instance, B14, a post-doc, mentioned that:

before I came here I've never considered like the ... this relationship between academia and industrial companies and things like that but because I never had a contact with that; since here I've seen how it works, how it can be done, yeah, it think I would be open to that now ...

From this narrative it emerged that he was aware of a trend to 'get closer to industry' which he considered 'positive' and with 'many potential benefits', and this awareness increased as he relocated to a UK university where such activities were more widespread than the university he was before, in another country.

This constitutes a significant finding as it signals potential for permeability of academics' work identity, including those who may appear more traditional. We cannot confirm whether this curiosity coincides with a potential future involvement, but it does indicate that the norms and practices shared within groups may be shaped.

## Discussion and conclusion

The present study suggests that AE is an individual choice made in contexts which influence the positions assumed by academics in relation to the possibility of embracing an entrepreneurial role. The positions or categories identified could be figuratively placed along a continuum where the two opposite poles are 'entrepreneurial', on one side, and 'reluctant' the other, with a variety of contentious mixed and instrumental views in between. While some of these profiles may in part resemble those of previous studies, they also differ from them. As a result of the cross-country analysis, the inclusion of academics from a variety of STEM disciplines, as well as of academics at different career stages, with differing levels of entrepreneurial experience, we were able to identify more nuanced stories than those of previous studies. While all these elements add complexity to the analysis, such a holistic approach is encouraged by previous studies (e.g. Cunningham and Fraser 2022), as AE is a complex phenomenon, shaped by multiple elements, or contexts. Evidence gathered enabled us to summarize these main influential contexts as a) the national and institutional

ones; b) the discipline; c) the profession. The multitude of contexts within which academics are embedded (Korsgaard et al. 2022), but also their dynamic interactions, stimulate various identity work processes (Radu-Lefebvre et al. 2021) which in turn influence entrepreneurial behaviour.

Through such a lens, we put forward a series of arguments. First, we depart from the literature that depicts AE as necessarily a trigger for 'identity schism' (Winter 2009 121) and 'identity misalignment' (Meek and Wood 2016 1093). Our findings, instead, corroborate and expand knowledge on the idea of AE as a change that may produce identity work towards an aligned and complementary inclusion of various roles in academics' work identity.

Thanks to the cross-country comparison adopted, we contribute evidence on the role of institutional environments in which academics work in shaping identity processes towards *integrated* work identity reconfigurations. For instance, in contexts such as the UK where entrepreneurial activities were recognized, encouraged and rewarded through career promotion, some academics appeared to be able to reconfigure their traditional academic work identity to include what Jain, George, and Maltarich (2009 929) defined as a 'commercial persona', i.e. an additional self which incorporates attitudes and behaviours of another profession. This *new self* allows academics to perceive a sense of alignment between their academic roles and identity, and entrepreneurship. Institutional and formal recognition may significantly shape and stimulate the adoption of new norms, values, and practices of the contexts within which academics work, are trained, and socialized, which then become legitimated aspects of 'what an academic does'.

We continue with the claim that AE does not always trigger a schism by arguing that AE is not always 'a change'. Specifically, our findings showed that in certain disciplinary fields, especially those with a traditional applied orientation of research, academics expressed a natural *openness* towards entrepreneurship, which was perceived as *aligned* and *integrated* with their various roles; in this sense, we argue against the idea of the entrepreneurial university as always a 'wave of change', suggesting instead that AE, in certain contexts, is the expression of *continuity* of academics' practices and ultimately work identity. The presence of these types of 'open' academics across the three countries suggests that the specific nature of a discipline is a 'supranational' (Miranda, Chamorro, and Rubio 2018, 1021) factor influencing academics' work identity configurations.

In contrast, in those STEM fields which are more oriented towards fundamental science academics were less favourably inclined towards entrepreneurship. This was typical in disciplines such as Physics or Health Sciences, to which academics showed a specific loyalty and commitment, resembling Gouldner's (1957) 'cosmopolitans' (290), and where entrepreneurship was perceived as a 'betrayal' or 'dangerous'. This evidence suggests that the structure and culture of disciplinary communities influence the career experiences and practices of academics (Kaulisch and Enders 2005, 139), and provides a sense of continuity of work identity. We therefore argue in support of what Ylijoki and Henriksson (2017, 1298) reported as the 'discipline-centred notion of an academic career' where stories of 'what we do here' are shared within the 'core territory' (ibid.) delineated by the discipline. This is an important finding as it shows how academic identity is strongly tied to norms of disciplinary communities, the values, and practices of which become 'inextricably intertwined with their identity' (Jain, George, and Maltarich 2009, 923).

This is not to say that academic work identity is not susceptible to change, and indeed this study shows that some academics may be encouraged to incorporate new roles, but that there are various elements, practical and symbolic, which influence identity work processes of academics' work identity, and some of them trigger strong sense of continuity. At a practical level, this suggests that proponents of AE should consider the specific nature of various disciplines, supporting a variety of forms of entrepreneurial activities taking into consideration disciplines' peculiarities.

Our findings also identify the influence of institutional and national contexts in which academics work and live. While earlier we argued in favour of harmonic change, which emerged from some of UK interviewees, findings from Italy, where recognition for AE is weaker, or from Australia where change towards a more entrepreneurial university is still partial or 'in progress', suggest the presence of ambiguous, 'mixed' opinions and positions towards AE amongst some academics, reflecting the

presence of complex and contrasting tensions to be resolved, or mitigated. So, while national and institutional contexts may promote change, they can also present barriers. For example, some Italians talked about not only relatively weak recognition for AE, but also a focus on fundamental science – rather than applied – in the Italian university system, which in turn hinders academia-industry collaborations, as it does not create a fertile ground and culture for it. Here, evidence shows the combined role of institutional and national contexts' features in shaping academics' entrepreneurial tendencies. Notably, this evidence echoes the findings of the study of Cunningham and Fraser's (2022), in which their Italian interviewees discussed a strongly theoretical national university system, which only weakly encourages application. The authors, comparing evidence from the UK, Finland, and Italy, suggest that national contexts, through socio, economic, and cultural conditions, produce an 'image of entrepreneurship' (569) which become a behavioural guidance for individuals, and a sense-making and legitimizing framework.

Our findings also corroborate those of Karhunen and colleagues' study (Karhunen, Olimpieva, and Hytti 2017) which have focused on Finnish and Russian scientists. These authors noticed differences in tendencies towards AE which could be ascribed to how the norms of science were portrayed, perpetuated, and modified in each country, along with their broader socio-economic conditions. In Russia, where 'academic capitalism' (560) has a shorter history, traditional portraits of the academic role and identity – for whom research and science constitute key identity features – are still circulating in the narratives of scientists, even amongst those involved in commercial ventures.

In Finland, instead, the figure of the scientists-entrepreneur, as two intertwined roles, was the description many academics reported of themselves. As the authors suggest, different outcomes as well as stimuli deriving from the national contexts can be situated in the discourse of universities as part of National Innovation Systems which suggests differences in academia-industry outcomes due to countries' specific institutional arrangements, cultural orientations, norms, and policies. National differences in AE are thus to be expected and accounted for. As reported for general entrepreneurship, we can argue that also AE is 'a fundamentally embedded activity, and as a result, it will unfold differently as contexts vary' (Korsgaard et al. 2022, 211). This does not mean that some AE best practices (Van Looy 2009) cannot be developed and shared, but these may present limitations; *ad hoc* initiatives may be more effective in leveraging on the specificities of the national systems within which universities can innovatively contribute.

We add that, along with differences in national and institutional systems, it is important to take into consideration the variety of sub-populations of academics within universities. Regarding specifically the perception of dual pressures between publishing and being involved in a variety of other activities – including AE – we could notice that while these were generally salient for all academics, they may assume a different relevance depending on the career stage. The study has shown that for some early career academics dual pressures assume the form of 'conflicting pressures and ambivalence as to what makes a successful academic career' (Ylijoki and Henriksson, 2017, 1293). These conflicts often trigger the development of *mixed* opinions towards AE, which may be seen as useful to attract research funding, and translate research into practice, but also perceived as difficult to approach, and having an ambiguous or limited impact upon career progression. This tension leads some of these interviewees to remain in a *liminal* state which is both a potential source for change but also a trigger for conflict (Muhr et al., 2019; Ibarra 2007). This is an important insight, which we were able to grasp by having included academics at different career stages in the study. In line with studies on entrepreneurial identity (Radu-Lefebvre et al. 2021), we argue that academics' work identity and its potential re-construction may also vary according to time, and specifically the subjective perceptions individuals have of their identities 'in different situations, and at different points of their careers' (1572). We contribute here to the literature on work identity supporting its dynamic, or 'fluid' (ibid.1560), nature that not only changes, but also the factors that may impact upon work identity changes may also modify over time. At a practical level, this suggests that if universities aim to promote AE, they should consider the impact such activities have on academics' working practices, workload and recognition. Academics, like other professionals, make careful



evaluations of costs and benefits of their actions at work, and they 'need to understand the price of certain choices' (Dany, Louvel, and Valette 2011, 992). To influence choices, universities could make the outcomes of them more legitimate as well as legible, i.e. what is expected needs to be clear (Dany, Louvel, and Valette 2011). This is especially because entrepreneurship may come at the expense of other activities; academics have to deal with various, and sometimes contrasting, pressures such as those of producing research and publish while also engaging with industrial partners. Recognition and formalized reward may thus give a legible and legitimate place to entrepreneurial activities, in academics' workload, and work identity.

Furthermore, in this study, we have included academics with and without entrepreneurial experience, adding to the literature insight on the variety of factors influencing academics' identity work, often analysed amongst those with entrepreneurial experience (Karhunen, Olimpieva, and Hytti 2017). In so doing, we were able to grasp a more nuanced picture where academics without entrepreneurial experience are not all traditional scientists exclusively dedicated to science and who see AE as a betrayal (Lam 2010); we have instead also found *curiosity* for entrepreneurship amongst those not yet involved in it, which through support, and recognition, may be fostered. This could be particularly the case of academics at early career stages. While this study cannot evaluate longitudinally whether changes in institutional arrangements may lead to changes in academics' propensity to engage in entrepreneurial activities, the findings suggest that some junior academics are receptive to changes in normative frameworks, and these may become triggers for change in practices, and ultimately an identity work process which may include a development of a new work identity.

In this regard, we propose here our final argument which suggests a better alignment between the academic and entrepreneurial world may entail creating a bridge between the two through the lens of social entrepreneurship. It was striking that across the three countries and universities there was a strong preference for an academic career which was shared as the career desire by the vast majority of the interviewees, including those who had work experience outside academia, and those who were planning a career change. The narratives suggested that such attachment was underpinned by a perception of a career in academia as a 'calling', confirming the literature on academic identity and profession (e.g. Weber 1946 [1919]; Hakala 2009). Notably, the calling resembled the more modern definition proposed by Berthoin Antal and Rogge (2020) of 'agentic calling' (205), i.e. a career path that has been actively chosen and pursued, and not passively received as a 'gift' or because of destiny. This agentic component for the academics in this study was underpinned by interests and values such as intellectual stimulation, freedom of thinking, discovery, innovation, and accomplishment of societal goals. Notably, these were also often reported as the main motivations for engaging in knowledge transfer and science commercialization. The study thus contributes to our understanding of the academic profession as still imbued of the core, traditionally values- as for example societal contribution – which remain *common motifs* of academic professional identity, and influence practices and behaviours even where there are moves towards higher degrees of entrepreneurialism. This confirms the previous literature which suggests that despite changes in Higher Education system across the globe, there is also evidence of persistence and *continuity* of certain core traditional professional traits (e.g. Ylijoki and Henriksson 2017) which remain part of individual academics' work identity. The salience and persistence of what can be considered as 'virtuous dispositions' of the academic work identity (Fitzmaurice 2013, 614), or what Balven et al. (2018, 32) define as 'deontic justice' - the willingness of academics to address societal problems with their research activities – let us argue that a better alignment between entrepreneurship and academia may entail re-framing AE through the lens of social entrepreneurship. One of the key features of social entrepreneurship which distinguishes it from traditional entrepreneurship is the orientation towards creation of social value, rather than profit *per sé*, and its focus on integrating social and commercial logics (Lewis 2016). Social entrepreneurship may thus become a bridge between logics which have long been portrayed as contradictory, i.e. science and business. This new lens on AE may better support the third mission becoming an enrichment of academics' working life, and identity,

rather than a third burden, as perceived by some academics. This redefinition of AE may support entrepreneurship within academia broadly, since, as reported earlier, societal aims are still core values across academics in various institutional and national contexts. We may speculate that such an alignment of values may constitute a safe bridge to cross especially for those academics finding themselves in challenging territories for entrepreneurship – such as certain disciplinary fields. As social entrepreneurship is rising (Wry and York 2017; Jarrodi, Byrne, and Bureau 2019), AE may be redefined, through a lens which may help academics navigate the ‘sea of change’ (Meek and Wood 2016, 1093) in a less challenging and conflict laden way. This however would not constitute a panacea for all academics, but rather an additional, different way of seeing entrepreneurship within academia which may mitigate the sense of reluctance and dissonance perceived by some academics. As for general entrepreneurship (Anderson 2015;; Cunningham and Fraser 2022), seeing AE as a mere economic function may hinder its actual potential, and provides only a partial understanding of it. This study suggests taking a more holistic approach (Cunningham and Fraser 2022) to AE which could be seen as a socio-economic activity (Anderson 2015), and where the individual academic is at the centre of the process. This means taking into account the contexts in which work identity dynamics unfold.

We may also argue that practical support and formal recognition may encourage the *curiosity* for entrepreneurship as expressed by some of those ‘traditional academics’ (Duberley, Cohen, and Leeson 2007, 484) found in our study for whom AE was not necessarily incompatible with their profession, but challenged by the *contexts* they were embedded in, for instance specific national and institutional settings. This is to say that compared to other studies (e.g. Lam 2010) we found potential for AE also amongst some more traditional profiles, and this could be fostered by acting upon the symbolic as well as the structural features of certain *places*. However, we would adopt a cautious attitude, given that features of certain contexts – e.g. the fundamental nature of certain disciplines – appeared to be particularly powerful in determining specific work identity stances, and reinforcing resistance to change. Furthermore, we must be mindful of the multifaceted and interlinked nature of contexts (Cohen and Duberley 2015), where each acts upon the other in dynamic interactions which can ultimately be understood through the lens of complexity, rather than as individual, separate forces. While this limits the temptation to attribute a deterministic role to specific elements alone as influential upon academics’ entrepreneurial behaviour, on the other hand, it suggests that opportunities may derive from various contexts.

## Limitations and future research

The adoption of a cross-country approach has enabled insight into some of the over-arching as well as context-specific influences on the adoption of AE. This constitutes a strength as well as a limitation of this work; while we can argue that similar universities in various countries may experience similar dynamics, we also noticed differences, thus suggesting caution in making generalizations. This applies to universities around the globe and/or located in national contexts where the initiatives towards AE are at a significantly different level and rate of development, as well as to teaching-oriented universities, in which academia-industry dynamics may differ from those in research-intense universities. Future comparative research, amongst countries and types of universities, may provide insight on how the various contexts in which academics are embedded shape their work identity, and the possibility of embracing an entrepreneurial role.

Furthermore, this study is specifically focused on STEM disciplines; further insight into other disciplines is deemed necessary to expand the knowledge on this important and growing topic.

Longitudinal studies may also provide insightful evidence on how academics’ entrepreneurial involvement changes as the career progresses, ultimately a point which emerged from this study, as well as how it changes as initiatives continue to expand.

The bridge between social entrepreneurship and academic entrepreneurship highlighted here could also be a link to analyse further, to explore whether shared meanings and values between the

academic profession and social entrepreneurship may foster AE more broadly, especially across those academics for whom AE is still a challenging and controversial arena. This could be achieved through a finer-grained analysis of which specific entrepreneurial activities are preferred and how they are experienced by academics, as well as by looking for cases where forms of social entrepreneurial activities have been or will be implemented.

Finally, a research avenue may entail the analysis of how AE is situated within academics' agenda in terms of workload, and how it may affect work-life balance. It is argued that increasing pressure to perform different roles is not only creating an 'identity schism' (Winter 2009 121), but also an increased workload (Vostal, 2020), with potential detrimental effects on academics' work-life balance, ultimately in line with the time-constraints experienced by many academics in this study. An analysis on the impact of the third mission on academics' working lives may provide insight on how the academics' working lives are changing as a result of the entrepreneurial university, and the extent to which this is compatible not only with academics' identity, but also their workload.

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## Data Availability statement

Data supporting this paper are partially contained in the text, and in the Supplementary Information and Material. For ethical and privacy reasons, not all data can be made publicly available.

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