1. Talent management and innovation management: Review of the literature and challenges for future research

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1 INTRODUCTION

Talent management (TM) has turned out to be one of fastest-growing areas of academic work in the fields of international strategy (Morris, Snell & Björkman, 2016), organization (Collings, Scullion & Vaiman, 2015) and entrepreneurship (Liu & Almor, 2016; Wang & Liu, 2016) over recent decades. Since McKinsey consultants coined the term the ‘war for talent’ (Axelrod, Handfield-Jones & Welsh, 2001; Chambers et al., 1998), a growing number of practitioners and scholars have devoted their attention to the concept and stressed the importance of talent in sparking firms’ success (or their failure) (Bethke-Langenegger, Mahler & Staffelbach, 2011). Currently, debate on TM is organized around three distinct strains of thought (Lewis & Heckman, 2006). The first refers to TM as a collection of typically human resource management department practices (Byham, 2009; Chuai, Preece & Iles, 2008). The second considers TM as synonymous with management and valorization of talent pools (Bartlett & Ghoshal, 2002). The third refers generically to the management of talented employees (Michaels, Axelrod & Handfield-Jones, 2001).

Despite its growing popularity, the research on TM suffers from several shortcomings that limit its theoretical and practical contribution. Even though several reviews have aimed at clarifying the scope of the concept (Collings & Mellahi, 2009; Collings et al., 2015; Tarique & Schuler, 2010) and a number of special issues have been published in top-tier journals, such as *Journal of World Business* (2014) and *International Journal of Human Resource Management* (2017), TM still fails to be linked systematically to researched-based findings as well as failing to have strong practical guidelines (Gallardo-Gallardo et al., 2015).

We hold that in order to overcome these limits and enrich the debate on TM, it would be important to borrow from received findings of innovation literature and reinforce the integration especially with studies

on innovation management (IM) (Afuah, 2003). Actually, this branch of literature has exponentially evolved in recent years while emphasizing the role of individuals in contributing creatively to firms' change and innovation (Birkinshaw, Hamel & Mol, 2008; Cinici & Baglieri, 2016; Hidalgo & Albers, 2008). Unlike earlier studies of innovation that treated it as an artefact and proposed oversimplified models of what constitutes innovation, IM studies have considered innovation as a multifaceted process from new discoveries to eventual new products (Trott, 2008). Innovation has been treated as a combination of technology and human factors, as each on its own is unable to fully account for the range of determinant possibilities. In other words, IM has maintained that having good science and laboratories is necessary but not sufficient for good innovative performance. Additionally, even if previous studies have not accounted for direct relationships between individuals and innovative performance, they have clearly demonstrated that innovation needs the stimulus of individuals to be generated (Prajogo & Ahmed, 2006).

As individuals represent the core of both TM and IM analyses, in this chapter we advance the idea that for the sake of progression of its state-of-the-art, TM could benefit from more integration with the IM strand of literature. In so doing, we shall bibliometrically review the (modest) contribution that innovation studies have made to the recent advancements of the field. Second, we shall focus on talented people who are constantly engaged in innovation activities, that is, creative and scientific talents, analyse their strategic roles in crafting innovation and dig deeper into the ways the effective management of talents might impact on innovation. Third and finally, we propose our conceptual framework and highlight what we believe can be future research avenues for TM at individual, firm and ecosystem levels.

The remainder of the chapter is organized as follows. Using bibliometrics techniques, Section 2 analyses the branch of the received literature on TM that builds on innovation studies. In Section 3, the management of both scientific and creative talents and their impact on innovation are considered and examined. Section 4 identifies the knowledge gaps where future research at multiple levels and multiple contexts is needed. Section 5 summarizes and concludes the chapter.

2 TALENT MANAGEMENT AND INNOVATION: MAPPING THE LITERATURE'S INTERRELATIONS BY BIBLIOMETRIC ANALYSIS

We reviewed the state-of-the-art TM literature that intersects innovation studies by bibliometric analysis. In line with the broader management literature, a growing number of scholars of innovation have used bibliometric techniques to (1) review and update debate on specific issues (e.g., Di Stefano, Gambardella & Verona, 2012); (2) quantify and compare scientific activities at various levels of aggregation including institutions, countries, authors, journals and so on (e.g., Sun & Grimes, 2016); and (3) to detect an emerging area of research (e.g., Van der Have & Rubalcaba, 2016). Bibliometrics has also been used by TM scholars such as Dries (2013) and Gallardo-Gallardo et al. (2015) to demonstrate the growing state of the field.

Particularly, we adopt and compare the following three citation-based approaches: direct citation, bibliographic coupling and co-citation analysis. While direct citation comprises the direct relationship between two documents, bibliographic coupling investigates relations between publications that cite the same publication, and co-citation displays relations between publications that are cited by the same publication (Van Eck & Waltman, 2017). Each technique has some pros and cons. First, bibliographic coupling and co-citation relations are indirect connections so they could provide less precise information on the connection of publications than direct citation relations (Waltman & Van Eck, 2012). Second, bibliographic coupling or co-citation links between publications are greater in number with respect to direct citation links, so bibliographic coupling or co-citation relations with larger sets of publications can lead to computational issues. On the other hand, the use of the direct citation method has some disadvantage because in the analysed time span some publications may not be directly linked with other publications so is not possible to properly assign them to a cluster. This problem is more accentuated in short periods of analysis.

We drew the important differences between those three citation-based mapping approaches following Boyack and Klavans (2010), who assume a hypothetical situation in which the dataset is composed of nine articles (grey boxes, Figure 1.1). A–E are more recent so they have few or no citations, and M–P are older and so higher cited. There are also W–Z, which are not included in the set, but they received citations by the articles within the set. The example is set within a time frame of five years.

Look now at the clusters of documents created within the dataset, only considering the references within the set. In this case, since the articles are

Source: Boyak and Klavans (2010).

Figure 1.1 Comparing direct citation, bibliographic coupling, co-citation clustering and co-citation analysis

connected only if one cites another, direct citation only comprises connections within the set. As shown in Figure 1.1, the cluster (A,M,N) is formed because A references both M and N. Article B is not clustered because it does not cite articles in the set. Bibliographic coupling clusters articles that cite the same set of cited documents. As in Figure 1.1, only one cluster is created by considering internal connections, namely cluster (C,D), which is formed because C and D both cite O. Others' articles are not clustered since none of them cite an article referenced by another in the set.

The co-citation banks on a different science mapping methodology that comprises two different processes: co-citation clustering, which is simply the creation of clusters of co-cited articles, and co-citation analysis, which uses the result of the clustering and allocates current articles to the co-citation clusters (Heuschneider, Ehls & Herstatt, 2017; Jeong, Song & Ding, 2014;

Nerur, Rasheed & Natarajan, 2008). The co-citation analysis is considered to be the more typical approach. Figure 1.1 shows, using only links in the set, that the co-citation clustering creates a single cluster (M,N) because both M and N are cited by A. Expanding the process to the co-citation analysis, we have a cluster that includes article A, because A cites M and N.

The above explanation is meant to highlight the fact that, given a closed dataset, while bibliographic coupling allows a researcher to cluster more recent articles even if it includes a lower number of old articles, the co-citation approach operates in the opposite way as it clusters older articles and ignores the most recent if they are not cited (Boyack & Klavans, 2010; Zhao & Strotmann, 2008). The direct citation approach clusters articles more equally distributed in the time frame of the set and tends to group a higher number of articles in comparison with the other two methods.

2.1 Dataset

According to one of the goals of this chapter, that is, to provide a systematic review of the TM literature that intersects innovation studies, in this section we underline the interrelations between TM and innovation studies in the comprehensive portrait of the state-of-the-art TM literature. In order to accomplish this task, we built a dataset large enough to provide accurate results. We used the online database ISI Web of Knowledge provided by Clarivate Analytics, limiting the set of articles to those published from 2008 to 2018 and containing the word ‘talent management’ in the topic.

In order to create our dataset, we collected all the records from ISI Web of Knowledge following the process as described below:

1. Topic (title, abstract and keywords): ‘talent management’ AND years ‘2008–2018’.
2. Categories: ‘management’ AND ‘business’.
3. Document types: ‘articles’.
4. Language: ‘English’.

While Table 1.1 shows the entire composition in numbers of the dataset papers step by step, Figure 1.2 points toward their distribution over time.

Table 1.2 lists the 20 most important sources from which we selected the papers of our dataset.

Three main themes emerge from the analysis of the dataset sources. First, as expected, the TM debate has piqued the interest of journals specifically concerned with human resource management, primarily *International Journal of Human Resource Management* (with a total number of 44 papers), *Human Resource Management Review* (with a total

Table 1.1 Steps to filter the dataset

Step	Counts
Topic: ‘talent management’ AND years ‘2008–2018’	3385
Categories: ‘management’ AND ‘business’	1322
Document types: ‘articles’	615
Language: ‘English’	597

Note: 2018 data refers to the period January–July.

Source: ISI Web of Knowledge.

Figure 1.2 The evolution of TM literature in the period 2008 to 2018

number of 19 papers), and *Personnel Review* (with a total number of 17 papers). Second, it is interesting to note the discrete presence of journals in the field of international business, such as *Journal of World Business* (with a total number of 29 papers) and *European Journal of International Management* (with a total number of 15 papers). Their presence attests to the more ‘global’ dimension that has become attached to the concept over time (i.e., global talent management, GTM) (Vaiman, Scullion & Collings, 2012). Third and finally, two of the dataset sources listed in Table 1.2 belong to the *Financial Times*’s Top 50 – the list of journals used by the *Financial Times* in compiling the FT Research rank, which is used as part of the Global MBA, EMBA and Online MBA rankings – thus testifying that the debate has attracted the attention of the most valued scholars in academia. They are *Harvard Business Review* (with a total number of 27 papers) and *Human Resource Management* (with a total number of 15 papers), which achieved the 9th and 11th places of the FT ranking, respectively.

Table 1.2 The 20 most important sources

Source Title	No. of Papers (%)
<i>International Journal of Human Resource Management</i>	44 (6.9)
<i>Journal of World Business</i>	29 (4.5)
<i>Harvard Business Review</i>	27 (4.2)
<i>Human Resource Management Review</i>	19 (2.9)
<i>Personnel Review</i>	17 (2.6)
<i>Asia Pacific Journal of Human Resources</i>	15 (2.3)
<i>European Journal of International Management</i>	15 (2.3)
<i>Human Resource Management</i>	15 (2.3)
<i>Employee Relations</i>	14 (2.2)
<i>Career Development International</i>	10 (1.5)
<i>Human Resource Management Journal</i>	10 (1.5)
<i>Journal of Global Mobility: The Home of Expatriate Management Research</i>	10 (1.5)
<i>SA Journal of Human Resource Management</i>	10 (1.5)
<i>Human Resource Development International</i>	8 (1.2)
<i>Thunderbird International Business Review</i>	8 (1.2)
<i>International Journal of Organizational Analysis</i>	7 (1.1)
<i>Journal of Management Development</i>	7 (1.1)
<i>MIT Sloan Management Review</i>	7 (1.1)
<i>Pacific Business Review International</i>	7 (1.1)
<i>Asia Pacific Business Review</i>	6 (0.9)

Source: ISI Web of Science.

After constructing the dataset, we employed a specific software to analyse the 597 articles extracted from ISI Web of Knowledge in three visual maps representing, respectively, citation analysis, bibliographic coupling and co-citation analysis. Graphic mapping is an important methodology in the field of bibliometrics, since it allows the evaluation of the intellectual connections within a field of dynamically changing scientific knowledge. Particularly, we used VOSViewer, which is a software tool developed by two researchers from the Centre for Science and Technology of Leuven University, Belgium, for constructing and visualizing bibliometric networks (Van Eck & Waltman, 2010).

2.2 Citation Analysis

Figure 1.3 provides an overview of the structure of the TM field according to the citation analysis. Only those papers receiving at least 20 citations were included in the analysis. Ninety-three papers out of 597 met this

Note: Publications are labelled with the name of the first author. Colours (not shown) are used to indicate clusters.

Figure 1.3 The citation map of the TM literature

threshold. As 29 of them were not connected to each other, they were excluded from the analysis below.

The map consists of 64 papers distributed in ten clusters connected by 257 links. The distribution of the number of publications per cluster has a mean of 6.4 and a standard deviation of 2.7. There is one very small cluster consisting of just three publications located on the right-hand side of the map. The largest clusters are composed of 11 papers for each. A summary of the contents of the ten TM clusters is provided in Table 1.3.

Taken as a whole, the map reveals that cluster 1 is not only the most cited but also the most connected. Farndale et al. (2010), with their paper on the role of the corporate HR function in global TM, show 23 links through which these authors are connected with all the remaining clusters. Findings also reveal that the ten clusters use different theoretical lenses for analysing clusters' themes, which span from transaction cost economics (Bhattacharya & Michael, 2008), to agency theory (Farndale et al., 2010), cognitive theory (Mäkelä et al., 2010), and resource-based theory (Garavan, 2012), among others. Similarly, concerning the themes – which we extrapolated from papers' keywords – papers cover several broad themes, including global TM, employee turnover, internationalization, war for talent and global supply chain. Themes like global TM and employee turnover appear in more than one cluster, so testifying to the scholars' great interest they have taken over time.

Table 1.3 Summary of the contents of the ten direct citation clusters

Cluster	No. of Items	Important Authors	Main Topics
1	11	Bhattacharya and Michael (2008); Farndale, Scullion and Sparrow (2010)	Global TM, MNCs, Asian settings
2	11	Allen, Bryant and Vardaman (2010); Gallardo-Gallardo, Dries and González-Cruz (2013)	Theoretical issue with TM, psychological factors, employee turnover
3	7	Mäkelä, Björkman and Ehrnrooth (2010); Mellahi and Collings (2010)	Global TM, TM performance
4	7	Björkman et al. (2013); Stahl et al. (2012)	Global TM, social exchange
5	6	Al Ariss, Cascio and Paauwe (2014); Cerdin and Brewster (2014)	Theoretical issues with TM
6	5	McDonnell (2011); Twenge et al. (2010)	Employees turnover, 'war for talent'
7	5	Cappelli (2008); Thunnissen, Boselie and Fruytier (2013)	TM practices
8	5	McDonnell et al. (2010); Vaiman et al. (2012)	TM decision making
9	4	Schuler, Jackson and Tarique (2011); Stank, Paul Dittmann and Autry (2011)	Internal HR, global supply chain
10	3	Martin, Gollan and Grigg (2011); Meyskens et al. (2009)	Innovation, internationalization

Note: The two authors with the largest number of citations in a cluster are listed as important authors.

As far as innovation is concerned, it appears as one of the main topics in the cluster 10, which is the smallest, where Martin, Gollan and Grigg (2011) discuss the role of employer branding on innovation, corporate governance and reputation as well as HR practice. The paper is rooted in the valuable, rare, inimitable and organized (VRIO) resources and capabilities (resource-based view – RBV) framework (Barney, 1991) and has no data. Nevertheless, in cluster 1, the biggest, Garavan (2012) notes that GTM is viewed as strategically important by stakeholders of pharmaceutical MNCs and that the global pharmaceutical firms perpetuate greater control over talent coupled with increased involvement of the corporate and regional headquarters in subsidiary-level talent decisions. Also in this case, according to the period's mainstream, the author uses RBV to frame the paper.

Note: Publications are labelled with the name of the first author. Colours (not shown) are used to indicate clusters.

Figure 1.4 The bibliographic coupling map of the TM literature

2.3 Bibliographic Coupling

Figure 1.4 visualizes the bibliographic coupling network of the TM literature.

Compared to the direct citation network, this network is composed of a greater number of papers, that is, 87 documents, clustered into a fewer number of clusters, that is, seven clusters. Their distribution is highly concentrated apart from some relevant outliers characterized by high citation rates, such as Bhattacharya, Sen and Korschun (2008) and Twenge et al. (2010). Table 1.4 provides greater details of the seven clusters in terms of numbers of items, most important authors and discussed topics.

Some of the evidence emerged in the direct citation analysis is confirmed also by bibliographic coupling analysis. Particularly, global TM, which is present in clusters 2, 5 and 7, is confirmed to be the issue that has attracted most attention by scholars. Simultaneously, new themes, such as social corporate responsibility (cluster 5) and talent identification (cluster 3), come into view.

The bibliographic coupling analysis reveals a dense connection among the authors and the papers belonging to TM literature, which has left limited space for the topic of innovation. Unlike direct citation analysis, it does not appear as the main topic in any of the seven clusters. The two papers of our dataset that are specifically concerned with innovation are excluded from the main debate. In particular, Martin et al. (2011), which focuses on TM impact on innovation and lies in cluster 5, is basically

Table 1.4 Summary of the contents of the seven bibliographic coupling clusters

Cluster	No. of Items	Important Authors	Main Topics
1	29	Gruman and Saks (2011); Twenge et al. (2010)	Employee turnover, TM practices, employee engagement and performance
2	16	Farndale et al. (2010); Mäkelä et al. (2010)	Global TM, MNCs
3	13	Al Ariss et al. (2014); Björkman et al. (2013)	Theoretical reviews, TM identification
4	11	Gallardo-Gallardo, Dries and González-Cruz (2013); Thunnissen, Boselie and Fruytier (2013)	TM meaning, current prospects and research agenda
5	10	Bhattacharia et al. (2008); Mellahi and Collings (2010)	Global TM, social corporate responsibility
6	6	Stahl et al. (2012); Stank, Paul Dittmann and Autry (2011)	TM practices, Supply chain management
7	2	Sparrow, Farndale and Scullion (2013); Zahra (2011)	Global TM

Note: The two authors with the largest number of citations in a cluster are listed as important authors.

connected only to Sparrow et al.'s review (2013) and Sparrow and Makram (2015). Additionally, Garavan (2012), although showing strong connections within its own cluster (cluster 3) externally is connected only with the reviews by Gallardo-Gallardo et al. (2015) and Collings (2014).

2.4 Co-citation Analysis

Fifty-six out of 93 papers reaching the threshold of 20 citations are included in the co-citation analysis. Figure 1.5 presents the co-citation map of the TM literature.

The co-citation analysis reveals that papers are grouped in three clusters. The most cited items occupy a central position in the network and are also the most connected. In this layout, pivotal is the role played by three reviews, that is, Collings and Mellahi (2009), Lewis and Heckman (2006), Tarique and Schuler (2010), and the two conceptual papers Mellahi and Collings (2010) and Farndale et al. (2010). Table 1.5 digs deeper into the features of each cluster.

Note: Publications are labelled with the name of the first author and journal. Colours (not shown) are used to indicate clusters.

Figure 1.5 The co-citation map of the TM literature

Table 1.5 Summary of the contents of the three co-citation clusters

Cluster	No. of Items	Important Authors	Main Topics
1	21	Collings and Mellahi (2009); Lewis and Heckman (2006)	Theoretical reviews, MNCs
2	20	Dries (2013); Stahl et al. (2012)	Theoretical reviews, human resource management
3	15	Barney (1991); Michaels, Axelrod and Handfield-Jones (2001)	War for talent, RBV

Note: The two authors with the largest number of citations in a cluster are listed as important authors.

Both clusters 1 and 2 reveal the strong presence of reviews among the most cited items. While cluster 1 mainly focuses on human resource management in MNCs, in cluster 2 the discussion is centred on how efficient systems of human resource can contribute to firms’ success. The two clusters present different methodological attitudes, since papers belonging to cluster 1 use qualitative analysis (Eisenhardt, 1989) to build their arguments, while papers of cluster 2 are mostly conceptual.

Interest in innovation appears only in cluster 3. As emerged from the previous analysis, the discussion is still embryonic as TM is simply (theoretically) used to explain variation in levels of firms' innovation. For its great emphasis on the VRIO framework (Barney, 1991), RBV has been used as the main theory to support this argument.

3 CREATIVE VERSUS SCIENTIFIC TALENTS AND THEIR EFFECTS ON INNOVATION

While, as revealed by the bibliometric analyses of the previous sections, TM literature has shown a modest interest in innovation and indeed has tended to gloss over it, the innovation literature has been full of arguments regarding the importance for firms to attract, nurture and retain talents. Its main assumptions have been that talented people, such as inventors: (1) are more sensitive, resourceful and ingenious (Guilford, 1959); (2) enjoy adventures, are occupied in creative work and endeavour to realize their ideas (Cattani & Ferriani, 2008; Mackinnon, 1962); and (3) are of great significance to innovation performance in organizations, including R&D personnel, engineers, industry experts and so on (Mumford, 2000).

Two specific kinds of talents, namely creative and scientific, have been at the centre of the debate that has treated individuals as sources of innovative power in science and technology (Edmondson & Harvey, 2018; Florida, 2002, 2014; Henker, Sonnentag & Unger, 2015; Mumford, 2000; Rosing et al., 2018). Whereas creative talents have been conceived of as dealing with the production of useful new ideas, or ideas that can be implemented to solve significant novel problems (Lubart, 2001), scientific talents have been examined within the frame of the 'linear model of innovation' that prioritizes scientific research as the basis of innovation, and plays down the role of later players in the innovation process (Balconi, Brusoni & Orsenigo, 2010; Godin, 2006). Even if anchored in different perspectives, creative and scientific talents share the following features.

First, both categories of talents use their knowledge or expertise as a primary tool to generate innovation (Mumford, 2000). Diverse knowledge of multiple domains and deep knowledge in a specific domain can both lead to innovations (Taylor & Greve, 2006). Environments in which diverse knowledge domains are available are more likely to produce new ideas and new combinations of ideas that drive the creation of innovations. Diverse knowledge provides more components useful for making innovative combinations, which gives the opportunity for significant advances, but also for innovations that receive low evaluations because the combinations have unanticipated flaws (Fleming, 2001). The challenge of implementing

the diverse knowledge that arises from a broad search makes the generation of usable innovations difficult. In situations in which talents combine diverse knowledge domains, innovations are expected when the creators and scientists are able to effectively combine the knowledge and have well-established expertise (Perry-Smith & Shalley, 2003). In situations where creators and scientists draw on a single domain in a practised manner, incremental improvements are expected instead for non-experts, and non-incremental improvements for experts.

Second, both creative and scientific talents provide critical connectivity to universities and other sources of upstream knowledge (Arora & Gambardella, 1990; Oettl, 2012). In this way, creators and scientists are important boundary spanners (Azoulay, Zivin & Wang, 2010) because a difference in coding schemes exists between different entities participating in the innovation process. This mismatch creates the possibility of communication difficulties (Allen & Cohen, 1969). It can be alleviated, however, by the use of individuals ‘who are capable of translating between two coding schemes either through personal contact or knowledge of the literature, and who can act as bridges linking the organization to other organizations and workers in the field’ (ibid., p. 13).

Third, well-educated and/or talented people, such as creators and star scientists, are often more internationally mobile than unskilled workers and face more favourable immigration policies in receiving countries (Bauder, 2015; Fratesi, 2014; Harvey & Groutsis, 2015; Khilji, Tarique & Schuler, 2015; Rao & Drazin, 2002; Solimano, 2008; Storz, Riboldazzi & John, 2015). They leave their home countries attracted by higher salaries abroad, by the possibility of increasing their knowledge base and to transmit their own, to interact with peers of international recognition, and pursue a successful career. This set of factors can be considered as ‘pull factors’. In turn, ‘push factors’ that induce talented creators and scientists to emigrate are: low salaries at home, limited professional recognition, poor career prospects, and the absence of a critical mass of peers in their home country. A vehicle through which creators and scientists come to foreign countries is as graduate students to obtain a Master’s degree a PhD, or pursue a post-doctoral fellowship (Franzoni, Scellato & Stephan, 2012).

In spite of the above arguments, a number of empirical studies have demonstrated that the effects of creatives and star scientists on firm innovation is contingent on several factors. Hess and Rothaermel (2011) found that any performance effects of scientists on firm innovation are contingent upon the scientists’ connections to other firm-specific resources. Kehoe and Tzabbar (2015) showed that while innovation talents positively affect firms’ productivity, their presence constrains the emergence of other innovative leaders in an organization. They also found

that firm productivity and innovative leadership among average employees in a firm are greatest when a talented innovator has broad expertise and collaborates frequently. By analysing innovations in the comic book industry, Taylor and Greve (2006) revealed that it is not enough to have access to new knowledge to generate innovations but commitment and significant experience in a knowledge domain are also needed. More recently, Alizadeh and Schiffauerova (2018) investigated the role of individual scientists and their collaborations in a knowledge creation network. They found positive impact of star scientists on network productivity, but also negative effects on the flow of knowledge. More specifically, loyalty to previous partners in scientific collaborations leads to a static network, which hinders knowledge flow and lowers the knowledge transmission efficiency of the network.

4 EXPLORING NEW AVENUES FOR FUTURE RESEARCH

In line with Dries (2013), we retain that in order to advance the study of TM it is necessary to identify relevant theoretical perspectives that can serve as a basis from which to develop new theory or set up new empirical studies. For its interest in talents that are especially engaged in both creative and scientific fields, we consider that the innovation literature offers the opportunity to build a solid foundation for TM future research. More specifically, we hold that it might offer some useful insights into those aspects of TM that are not usually treated in the related literature.

Accordingly, in the sub-sections that follow we outline an agenda for future research that accounts for analyses at individual, firm and ecosystem levels. The main research questions are summarized in Figure 1.6.

Figure 1.6 TM future research and levels of analysis

4.1 Talent Management to Foster Innovation at Individual Level

A first aspect that TM literature should take into account through the lens of innovation studies concerns the role of colleges and universities in recognizing, nurturing and encouraging creative and scientific talents. To the extent that management research has analysed how the role of universities has changed over time from a mandate characterized as the Humboldt model with a primary emphasis on freedom and independence of scholarly inquiry and 'knowledge for its own sake', to being a source of knowledge that is requisite for economic growth (Audretsch, 2014), the focus has moved towards identifying the better mechanisms and policies that allow (talented) people to thrive in society and contribute to its economic development.

TM literature has neglected this aspect until now (Al Ariss, Cascio & Paauwe, 2014), whereas innovation literature has looked at the phenomenon through different theoretical lenses and drawing from different settings. With regard to the individual level of analysis, it has been widely acknowledged that individuals play a crucial role in innovation processes, including the case of university-based innovation (Fabrizio, 2009). It has been observed that universities play an important role as part of the innovation process, while researchers, as individuals working at universities, could be key agents in the whole process (Perkmann & Walsh, 2009). However, there are some important aspects that still need more attention, including the motivation needed for researchers to engage in innovative activities and the disparities between different areas of knowledge and backgrounds, among others. Additionally, it would be interesting to have a comparative analysis of the role of universities in shaping TM in different contexts as well as of the factors that influence the researchers' engagement in the universities' innovative activity. This kind of research could help university administrators better understand how to assess the contribution of universities and scientists to innovative activity and commercialization. This type of research would also help policy makers to better design institutional mechanisms dedicated to facilitating the spillover of talented individuals' knowledge from the university to firms and non-profit organizations.

A second aspect TM should consider on the grounds of the findings of the innovation studies at the individual level relates to the scientific collaboration networks that talents are able to be embedded in. Due to the high exposure to various sources of knowledge, scientific collaboration networks act as an enhancer of the learning process by facilitating the production and circulation of knowledge (Phelps, Heidl & Wadhwa, 2012). More specifically, interactions and linkages among talented scientists working across different institutional contexts, such as industry in private

labs, could function as conduits of knowledge spillovers and allow for information about innovation to transfer. Additionally, interactions and linkages with industry, such as participation on scientific boards of companies in industry, could facilitate flow of knowledge and information about the demand and potential for and likelihood of successful innovation (Taylor Aldridge, Audretsch, Desai & Nadella, 2017). TM scholars could contribute to a further step towards the understanding of the influence of collaboration networks on the knowledge creation activities and on the contingencies that affect the role of individual scientists in these networks.

4.2 Talent Management to Foster Innovation at Firm Level

With regard to the influence of TM on innovation at firm level, the most important aspect to consider concerns the theoretical models through which scholars have looked at the innovation process. In order to explain innovations in rapidly changing environments, an alternative model to the linear, called 'non-linear', has been proposed. The non-linear model of innovation means that innovation is widely recognized by the feedback loops involved and the creation of synergies in the range of information networks. Interactions between different phases are transforming and recursive, and interactively shape each other mutually. This approach recognizes 'knowledge' as a fundamental resource of the modern economy (Baecker et al., 2010). The range of alternative models differs from technology push, market pull, phase-gate model, and diffusion of innovations model. They also demonstrate that innovation processes can take place outside the boundaries of a single organization, thereby involving complex relationships among several players, both private and public, some of which are competitive, while others are collaborative (Chesbrough, 2003). Non-linear models have spanned from Stephen Kline's chain-linked model (Kline, 1985) to Ralph Gomory's circle model (Gomory, 1992), Alic and Branscomb's model (Alic et al., 1992), John Ziman's neural net model (Ziman, 1991) and also the Triple Helix universities–industry–government model by Etzkowitz and Leydesdorff (2000).

The large variety of the above-cited models highlights the failure to develop a universal model of the innovation process that meets all the requirements of a particular firm and time. In this broad context, firm innovation capability has been considered critical for firms' survival and growth and several studies have been focused on the various factors that can be expected to contribute to the build-up of innovation capability (Teece, 2007). They reside in a range of organizational learning processes and knowledge management practices (Schneckenberg, Truong & Mazloomi, 2015). Factors internal to the firm include, first, the knowledge

and skills brought into the firm by the entrepreneur(s) and employees that they obtained through earlier experience. The inability to recruit high-quality employees can be a serious constraint on subsequent growth (Prajogo & Ahmed, 2006; Romijn & Albaladejo, 2002).

Looking more deeply at the interrelations between TM and innovation at firm level, the most important question (currently unanswered) remains: which models work best in which contexts? In more detail, are there differences when we look at the ways TM affects innovation in large, medium or small firms? What about TM and innovation in a start-up company? These are open questions to which scholars could reply to, perhaps even proposing an original model of innovation that explicitly take into account the several dimensions of TM.

4.3 Talent Management to Foster Innovation at Ecosystem Level

The final aspect we conceive as crucial to insert into the future agenda regards the impact of TM on innovation processes at ecosystem level. Within the ecosystem, actors, including talented people, are either geographically localized or strategically linked to focus on developing a specific technology (Adner & Kapoor, 2010; Oh et al., 2016; Tsou, Chen & Yu, 2018). In fact, even with globalization there is sufficient 'stickiness' to knowledge that, as economic geographers find, local areas obtain some benefits from being the site of the innovation (Cinici & Baglieri, 2016). The local benefits may be due to the difficulty of transferring tacit knowledge beyond a given locality or to the scale benefits of having a substantial number of scientists and talented people in the same regional context. Whatever the mechanism, it would seem that for the globalization of knowledge to proceed as successfully as it has, it has to be accompanied by some stickiness in knowledge and in the benefits that follow from it (Freeman, 2010).

These insights should be reconciled with the global TM challenges. Global TM shows an international focus and emphasizes the role of multinational enterprises' internal system in ensuring key strategic employees are attracted, retained and deployed to best meet the organization strategic priorities (Collings, 2014; Tarique & Schuler, 2010). This testifies to a greater recognition of the critical role played by globally competent managerial talent in ensuring the success of MNCs. It testifies as well that competition for talents has shifted from the country level to the regional and global levels (Sparrow et al., 2013).

Within this broad picture, it would be interesting to investigate how TM practices influence different configurations of innovative ecosystems. What are the microfoundations of innovative ecosystems? And conversely, since it is the innovative context that regulates what individuals and teams get to

see, what choices they are likely to make, and what the outcomes of those choices are likely to be (Autio et al., 2014), how do the innovative ecosystems influence TM practices? In fact, despite the fact that the level of innovation within ecosystems depends on talents' knowledge – especially the tacit knowledge that cannot be easily transferred and replaced – ecosystems regulate the direction and quality of innovation by shaping the direction and potential rewards of alternative courses of technological development and even the types of innovation that will be accepted as legitimate.

5 CONCLUSIONS

In this chapter we reviewed the evolution of TM literature over the last decade. Although much effort has been devoted by the scholars of this field toward the examination of the received TM studies, we hold that our review is different from the previous ones (e.g., Collings et al., 2015; Tarique & Schuler, 2010) as our main focus was to highlight the interrelations with innovation studies rather than to provide a comprehensive picture of the state-of-the-art TM literature. Thanks to the adoption of several bibliographic mapping techniques, we found that at least in the last ten years TM scholars have almost neglected the insights and findings of related studies on innovation. Indeed, it has been said extensively that the TM literature suffers from important limitations regarding both theory – as it has few practical implications – and methods – as they mainly relate to anecdotes and cases (Al Ariss et al., 2014). In order to advance both theory and methodological techniques as well as to avoid the risk of becoming self-referential, we advocate for more integration with different streams of thought (Cinici & Dagnino, 2015) and in particular with innovation literature where talents have been conceived of and deeply analysed as sources of knowledge. We proposed to look at the interrelations between TM and innovation by distinguishing between different levels of analysis, that is, individual, firm and ecosystem levels.

To answer these questions, we would need more systematic data on all dimensions of TM and innovation. We will also need a revision to the content and methods of TM research to understand the multiple dimensions of TM processes and activities. This will, without doubt, improve our appreciation of the huge variety of TM activities and their contexts. Academics but also policy makers will have to constantly adapt to deal with such important challenges. They will have to recognize that TM profoundly affects innovation and show the interdependencies between the two literatures.

We hope that directions proposed in this chapter will inspire many

colleagues to borrow from the innovation literature strand so as to enrich our understanding of the role of TM in stimulating innovation and our knowledge of the outcomes of these processes.

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