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Social innovation research: An emerging area of innovation studies?

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ABSTRACT

While the adoption of Social Innovation (SI) in the governance and policy domain has fueled a rapidly expanding scholarly literature, this field has become characterized by conceptual ambiguity and a diversity of definitions and research settings. This present situation inhibits the integration of findings. This paper traces the content, scope and relatively short history of modern social innovation research across disciplines by applying network and bibliometric analyses, and explores their relevance to innovation studies. Based on data from 172 publications, we analyze scholarly works that directly address the social innovation topic, allowing us to identify the precedence, dynamics and the current map of social innovation research as an emerging field of study. Our analysis suggests that the SI field is grounded in four distinct intellectual communities arising through a somewhat organized diffusion process: 1) Community Psychology; 2) Creativity research; 3) Social and societal challenges; 4) Local development. The interest of SI in the areas of management and entrepreneurship is only very recent and is currently reflected within existing communities. We forge conceptual bridges between the two (currently very separate) domains of social innovation and innovation studies, and the implications of our finding for further research and policy are also discussed.

1. Introduction

The field of social innovation (SI) has received rapidly growing scholarly and policy interest[1] during the last decade (Adams and Hess, 2010), driven by such trends as the engagement of citizens and organizations in innovation, criticism of dominant business models and narrow economic outlooks on development, extensive declines in public spending, and the needs of developing economies, where innovation is not about cutting-edge technology but about solving social problems. An increase in social innovation has the potential to alter the structure of innovation systems, corporate identities and strategies, employee motivation, as well as public and private governance, thus presenting new challenges for policy and management practice. The field's rapid development during the last decade has primarily included practical issues from descriptive case studies, along with the creation of a plethora of concepts, definitions, research settings and theoretical boundary conditions. This has led to a present lack of clarity or overview of what constitutes the field's own history and current 'jurisdiction'. Despite recent efforts to define and clarify its meaning, the concept of social innovation (SI) is therefore still considered rather ambiguous, and the state of knowledge continues to be fragmented (Cajaiba-Santana, 2014; Dawson and Daniel, 2010; Pol and Ville, 2009). Significant work is still required to position the more discipline-bound analytical, conceptual and theoretical contributions made since the late 1980s (Jessop et al., 2013). Complementing prior conceptual discussions, this paper adopts an integrative review approach to address the fragmentation problem of the SI field by systematically charting its intellectual structure and development, contributing to a more complete, integrated understanding.

While earlier reviews concerning definitions (Dawson and Daniel, 2010; The Young Foundation, 2012; Pol and Ville, 2009) have been crucial in bringing some important characteristics of SI into focus, the SI area is not yet well integrated and consolidated as a research field. This present disintegrated state of the SI field complicates the systematic accumulation of knowledge

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[1] Examples are the European Commission's Social Innovation Initiative, the United States Office of Social Innovation and Civic Participation, the OECD Local Economic and Employment Development (LEED) forum on Social Innovations, and the Inter-American Development Bank's operations promoting social innovation activities in Latin America. Many of these actions are extremely heterogeneous, reflecting the lack of a common understanding on the topic.

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and growth of the emerging SI research field. In particular, this poses a challenge for scholars to develop generalizable knowledge and formulate articulate theories and hypotheses about the antecedents and consequences of SI, and under which circumstances these operate. According to Mohr (1982), the absence of cumulativeness obstructs theoretical development "so that theory within each separate stream of research has been inhibited by the absence of sets of related ideas. . .that might be fitted together to form the springboard for important, innovative departures." Raasch et al. (2013) highlight that the absence of a shared set of concepts, aims and research questions creates a challenge that phenomenon-based research fields often have to come to grips with. Practitioners, investors, policy makers and other stakeholders are in serious need of such knowledge in order to be able to formulate effective policies and strategies, underscoring the importance of a unified understanding for innovation policy and research. In addition, SI has been largely overlooked by the majority of innovation literature (Adams and Hess, 2010; Edwards-Schachter et al., 2012), with the mainstream of research in innovation studies traditionally focusing on technological innovation in manufacturing, though continuing to expand the range of questions and topics (e.g. Windrum et al., 2016; Drejer, 2004; Gallouj and Weinstein, 1997).

Given the inherent complexities of SI as an emerging subject, the goal of this article is to create an improved foundation for the process of theory-building by connecting the gaps between various strands of SI scholarship and creating a common organizing framework to identify central aspects and issues of the field. This is especially important for new research fields that emerge from different arenas (Torraco, 2005). Furthermore, we hope to enable the initial preconditions for integration of the SI field in the arena of innovation studies, defined by Fagerberg et al. (2012) as: ". . .the scholarly study of how innovation takes place and what the important explanatory factors and economic and social consequences are." SI research can contribute to the ongoing development of more holistic and non-technological approaches within innovation studies that are needed in the light of pressing 'grand challenges' that require more than technological solutions alone (Foray et al., 2012).

By systematically reviewing 172 publications from the period 1986–2013 in the field of SI with the help of bibliometric analysis, we uncover the formation of four distinct scholarly communities of SI, their connectedness, and the common distinctive elements that constitute them. Thus, our analysis is complementary to prior narrative reviews of SI. While a previous focus on the plurality of definitions appears not to have solved the perceived ambiguity surrounding SI research, our systematic and integrative review approach reveals that despite the existence of distinct intellectual communities and heterogeneity, significant shared 'core elements' do exist.

The remainder of the article is organized as follows: in the next section, we introduce the SI field with a brief discussion of key issues in recent work as well as its position in social entrepreneurship research. The third section then explains our method of review and the bibliometric approach. Section four presents and discusses the results of our analysis, and proposes new conceptual bridges between the currently very separate communities of innovation studies and social innovation research. In the final section we present our conclusions and suggestions for future research as well as implications for policy.

2. Variations in research on social innovation – a brief overview

We hope this paper can also inform readers who are not yet familiar with social innovation, and therefore provide as background information a short, but not complete, overview in which we describe various conceptions of social innovation found in the recent literature. It should be noted that this short sketch of literature does not do justice to the many nuances of the SI literature and does not serve to guide our analysis. The well-initiated reader may elect to skip over this section.

The scientific discourse on SI has lately had an emphasis on conceptual definitions, reflecting the lack of integration of the literature and ambiguity surrounding the scope and meaning of SI. While the diverse background of the field's progenitors (ranging from economist Joseph Schumpeter to sociologist William Ogburn) is related to this, space limitations do not permit us to discuss the field's key intellectual roots. Instead, we provide a brief overview of the recent conceptual discussion and definitions, and point to Neumeier (2012), Moulaert et al. (2013) and Cajaiba-Santana (2014) for added historical insight.

One of the first attempts to expand the debate on the meaning of social innovation by describing the SI literature was an introductory piece for a Special Topic issue in *Urban Studies* by Moulaert et al. (2005). Their survey focused mainly on works from disciplines that are relevant for spatial development. Moulaert et al. propose three dimensions of SI, which they suggest frequently interact: 1) satisfaction of human needs that are presently unmet; 2) changes in social relations; and 3) an empowerment dimension in the form of increasing socio-political capability and access to resources (Moulaert et al., 2005). This characterization has a recognizable sociological component.

Contemporary sociologists have conceptualized social innovation as new ways of creating and implementing social change. For example, Hochgerner (2011) defines social innovation as the new combination of social practices. Howaldt and Schwarz (2010) define it as "a new combination and/or new configuration of social practices in certain areas of action of social contexts prompted by certain actors or constellations of actors in an intentionally targeted manner with the goal of better satisfying or answering needs and problems than is possible on the basis of established practices". Thus the conceptual focus is on 'practices' and on the way they are combined. This approach considers social innovation more as a new innovation paradigm, rather than a separate category of innovation (e.g., as opposed to Taylor's (1970) distinction between social innovation and technological innovation or Ogburn and Duncan's (1964) complementarity between technical inventions and social inventions). Rather, social innovation refers to a large revitalization of the social aspects involved in any kind of innovation, technological innovation included.

Recently, Cajaiba- Santana (2014) developed a sociologically oriented framework to approach SI, departing from the same previous approaches: "social innovations are new social practices created from collective, intentional, and goal-oriented actions aimed at prompting social change through the reconfiguration of how social goals are accomplished." This framework combines the structural perspective of SI, focused on social structures and organization, with the (early Schumpeterian) individualistic agency perspective, focusing on individual agents and their characteristics as determinants for social innovation.

The sociologically oriented conceptualization of SI contrasts to the more economic conceptualization adopted by Pol and Ville (2009), who reviewed several used definitions of SI, and explored the differences between 'business innovation' and 'social innovation'. Their work discusses a limited sample of four different conceptions of SI in the literature, and concludes that their commonality is the improvement in the quality of life or the quantity of life. On the basis of this discussion, they re-define SI as any innovation of which the "implied new idea has the potential to improve either the quality or the quantity of life." (Pol and Ville, 2009).

Dawson and Daniel (2010) further delineate business- and social innovations, while acknowledging their possible overlap, and highlight the socially beneficial objective of SI as well.

Generally, the focus on "social practices" is more prominent in sociological conceptualizations of SI. Economic conceptualizations, on the other hand, are more outcome-oriented and related to the "ideas", "services" or new "systemic" transformations and associated social impacts. The latter has also been the focus of supranational organizations when defining social innovation as new services solutions (OECD, 2000; EU, 2011). The European Commission (2013) guide to social innovation states that "social innovation can be defined as the development and implementation of new ideas (products, services and models) to meet social needs and create new social relationships or collaborations" (page 6).

Ruiz and Parra (2013) combine a sociological and an economic perspective by defining social innovation as the design and implementation process as well as a process of disseminating new social practices and policies to promote change in the social organization of people to promote economic ends. In the widest sense that we encountered SI in the literature, a macro and political perspective of social innovation is provided by Callon (2007), for whom social innovation relates to new ways of interactions between economy and society, where new innovation regimes boost new roles for the social and political dimensions in economy.

A very different approach focuses selectively on some aspect of the research setting in order to seek a more focused and precise definition within specific areas, such as social entrepreneurship or inclusive innovation, and is gaining particular influence in the context of developing economies (e.g., Lundvall et al., 2011; OECD and The World Bank, 2012). Similarly, based on this logic, we also find accounts of innovative activity in the third sector, as well as non-profit activities within businesses.

The diversity of conceptualizations creates ambiguity in the use of the term, but also connects different approaches and disciplines associated each conceptualization. The lack of a commonly accepted comprehensive definition simultaneously reflects fragmentation of the research field and the fact that social innovation is a complex, multi-faceted phenomenon that spans a wide range of activities from grassroots social innovations that respond to pressing social demands which are not commercially viable due to market failure, to novel products and services produced by private, third sector, or public sector organizations (or a combination thereof), to new combinations of social practices, attitudes and values and to systemic innovations involving fundamental changes in strategies and policies, organizational structures and institutional frameworks. The focus on new social relations and mobilization-participation within a changing macro socio-economic environment, and resulting social impact is somewhat of a common ground for sociologists, economists and management researchers, and urban and regional specialists contributing to the handbook of social innovation (Moulaert et al., 2013). In the following sections we will try to create and interpret a comprehensive chart of the literature.

3. Method of review

In the light of recent developments and present diversity, we aim to map the field as a whole and adopt an integrative review approach, since we cover an emerging topic that would benefit from a comprehensive integration of the literature to date, especially as SI research emerges from different arenas. This can assist the conceptualization of the research area in terms of initial models or frameworks (Torraco, 2005). To obtain insight into the SI literature as a whole, we conducted a systematic literature search aimed at a high inclusiveness, and applied bibliometric analysis to create a full thematic overview of the established body of knowledge. Such a systematic-review approach differs from traditional narrative reviews by adopting a replicable, scientific and transparent process/method, which aims to minimize bias through exhaustive literature searches (Tranfield et al., 2003). As there are various strands of work carried out under the label 'social innovation', narrative reviews entail the risk of being not fully complete in scope. Our bibliometric analysis is intended to be complementary to existing narrative reviews of social innovation.

However, we should note that the use of bibliometrics is also not entirely without shortcomings. First, as opposed to some other, more widely applied methods of data analysis such as econometrics and psychometrics, there is a less clear 'golden standard' for judging the quality of bibliometric analysis (Schildt et al., 2006). Second, as Campbell et al. (2010) point out, the application of bibliometrics with citation data has been criticized, particularly in the context of scientific research evaluation. Based on Campbell et al. (2010) and King (1987), possible limitations of using bibliometrics in the context of our analysis include: 1) analysis of citations assumes that citations are of substantive importance to the represented scholarly work; 2) erroneous or discredited work is sometimes highly cited; 3) citation databases as a data source may in some cases miscount citations due to indexing errors; 4) large, international bibliographic databases such as Web of Science may have a bias towards scholarly work from countries that publish in English-language journals in lieu of countries with scholars who also publish in other languages.

It is also important to note that our study strictly covers scientific, non-invited peer-reviewed journal articles that make explicit mention of the concept of social innovation and that we do not cover other related concepts. Our data set also does not cover works published in books, magazines,[2] reports, working papers and other non-refereed sources. In our case, the latter two limitations particularly pertain to research communities in areas like Canada (e.g. Fontan et al., 2013; Klein and Harrisson, 2006), Germany, and Austria (e.g. Franz et al., 2012) which have relevant activity in social innovation research. In addition, they could underestimate significant developments occurring in developing countries. Thus, while we recognize that there is a wide collection of work that covers social innovation that is available through these other means and in other languages, peer-reviewed journal articles encompass validated knowledge, and also tend to have more impact on a field's development (Podsakoff et al., 2005).

3.1. Data

We first searched the Social Sciences Citation Index® (SSCI) at the ISI Web of Science (WoS) to retrieve citation data and compile our database. According to Thomson Reuters, which publishes SSCI, "every journal included in Social Sciences Citation Index® has met the high standards of an objective evaluation process."[3] This has the advantage that it filters out any bibliographic data from less reputable journals of which the impact on the scientific discourse could be called into question, thus preserving a high degree of data integrity. For sure, the opposite could be argued in that any important omitted journals may bias the results of our analysis. Despite the SSCI's broad coverage of the literature, we found that Web of Science did not include all the relevant journals in the field of Social Innovation. To check this, we performed an additional, iden-

[2] While *Stanford Social Innovation Review* focuses on SI, as a practice-oriented publication it does not qualify as a peer-reviewed scientific journal and was therefore not included in our analysis.

[3] Source: http://thomsonreuters.com/social-sciences-citation-index/.

tical query in another major bibliographic database: Scopus.[4] After manually comparing all the search results at the journal level, we chose to include citations from three important additional journals that were not present in SSCI: the *Journal of Social Entrepreneurship* (10 records); the *International Journal of Interdisciplinary Social Sciences* (2 records); and the *Review of Social Economy* (2 records).

To safeguard sufficient completeness of our dataset we searched both databases for all articles having the phrase "social innov*" appearing in their abstract, title or keyword fields, thus including variations in terms that are of interest such as 'social innovations' or 'social innovator'.[5] The target fields were chosen such that it is likely that the SI concept is significant enough in the publications and is not merely mentioned in passing in the body or reference list of an article. Our search yielded full bibliographic records of articles published between January 1986[6] through 2013, excluding publications not written in English, book reviews, and editorial articles, which have more limited content (Schildt et al., 2006). In the next step, we merged the Scopus data with the WoS data and cleaned the merged dataset so that it did not contain any duplicate articles due to issues such as spelling variations. Our final data set consists of 172 unique publications from the above mentioned time- period, encompassing approximately 6500 records on cited references, and more than 400 different keywords.

3.2. Analytical approach

We apply current quantitative techniques used in bibliometrics such as algorithmic community detection to study different groups of closely connected articles, as well as detecting trends over time. Generally, bibliometric analysis is based on the notion that bibliographic records, including citations, are useful gauges of scientific activity (Garfield et al., 1978), and has recently also become an accepted method of studying the scope and dynamics of scientific fields in Innovation Studies and Entrepreneurship (see e.g. Landström et al., 2012; Markard et al., 2012; Raasch et al., 2013; Schildt et al., 2006).

It is common practice in bibliometric studies to construct a relationship between cited references or topic keywords, a method also known as 'scientific mapping' (Boyack and Klavans, 2010). The co-occurrence of keywords or citations (co-citations) within a document, respectively link topics or cited articles, and can be visualized and analyzed as a network of relationships between keywords or documents respectively. The more frequently these co-occur, the stronger they are related because they belong to a similar sub-area of research. Therefore, this information can also be used to detect the presence of otherwise invisible 'communities' (e.g. Gmür, 2003). Such detection requires the partition of a network into communities of densely connected nodes, where each set of nodes is strongly connected internally. For our analysis we used the community detection algorithm developed by Blondel et al. (2008) as implemented in the Gephi program.

Scientific mapping can be done via different approaches. We extracted the network based on bibliographic coupling (Kessler, 1963), because we are more interested in the shared 'background' of current literature than core cited documents. Bibliographic coupling (BC) connects documents that cite the same set of references, thus assuming that papers that share more references are more similar to each other. Boyack and Klavans (2010) found that BC produced slightly more accurate clustering results than the commonly used method of co-citation, but noted recently that because BC is somewhat more sensitive to recent common references than co-citation (cf.van Raan, 2005), this may explain their earlier result (Klavans and Boyack, 2016). Nonetheless, BC and Co-citation methods generally produce very similar networks (Yan and Ding, 2012). As a number of papers in our initial dataset (n = 172) were isolated in the sense that they did not have any citations in common with other papers in our set, we dropped these isolates from the network analysis for visualization purposes, bringing the number of shown nodes down to 157 (i.e., 91% of the original set). The bibliographic coupling network was constructed using a normalized similarity measure by means of the Cosine index (Salton and McGill, 1983).

Finally, bibliometric datasets are pre-eminently suitable for analyzing changes and trends over time, as the data can be viewed as a discrete time series spaced by regular time intervals. However, as our dataset is relatively small for longitudinal network analysis and its temporal distribution is highly skewed, it did not seem feasible to draw networks for various periods (cf. Raasch et al., 2013). Instead, we identified sudden salient increases in the frequency of publication activity in different characteristics of publications over time by way of noteworthy activity 'bursts' taking place in publications' journals and subject categories. This provides insights in how the field of SI changes in terms of new research emphases. For our analysis of bursts, we applied the burst detection algorithm developed by Kleinberg (2003) and implemented in the Sci^2 software program (Sci2-Team, 2009).

4. Results and discussion

4.1. Social innovation as an emerging field

Fig. 1 depicts the distribution over time of the core set of analyzed articles included in our review. It indicates that the observation period 1986–2013 can be divided into two general phases: an early emergence period during which no more than two papers were published annually (except in 1999 when 5 papers on SI were published) and a period of ferment, or 'take-off phase', which started about a decade ago in 2003. Since that year, scholarly activity dealing with SI has been growing exponentially, even hitting almost 40 published articles in 2012.

In these two periods, by far the most influential two articles have been Swyngedouw's (2005) paper (174 citations) on innovative and more participatory governance arrangements, and Ramirez's (1999) paper (145 citations), which outlines an alternative framework for understanding value-creation based on technical and social innovations in total realized value-creation. The popularity of both papers, visible as large nodes in Fig. 2, stems from their broad implications, which led to them often being cited by scholars not primarily concerned with SI itself.

4.2. Scholarly communities

We created a network of documents based on the principle of bibliographic coupling. Fig. 2 presents our final bibliographic coupling map, covering 157 nodes and 636 edges, spanning 91% of our entire dataset. Our algorithmic community-detection analysis of the network reveals a modular structure: we find four distinct but interrelated clusters, or domains. The result from our community detection analysis is visualized by means of color coding of the nodes according to the community to which they belong. Initially, the community detection algorithm found a solution of 6 sub-groups. Upon closer inspection, however, two of these 'groups'

[4] We acknowledge that by choosing these data sources, we miss some less formal, but significant resources (in particular the Social Science Research Network (SSRN) that can guide the discussion and developments in SI even though not fully part of the 'authoritative' academic discourse (i.e. peer-reviewed journal articles). We do not know to what extent peer-reviewed literature 'accurately' represents a concept before it is more fully established vis-à-vis sources such as SSRN.

[5] A limitation of this strategy is that similar phenomena might also be referred to as 'community innovation', 'grassroots innovation', etc.

[6] This was the earliest year available at the time of query.

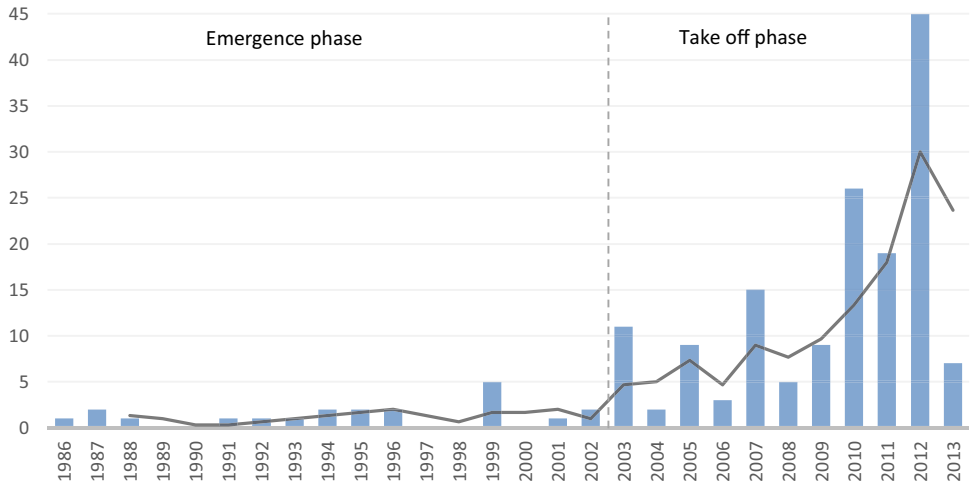

Fig. 1. Annual distribution of 172 SI publications during 1986–2013.
Data: Thomson Reuters ISI Web of Science™ and Scopus. Note: ISI data for 2013 is until July. Trend line based on 3-year averages

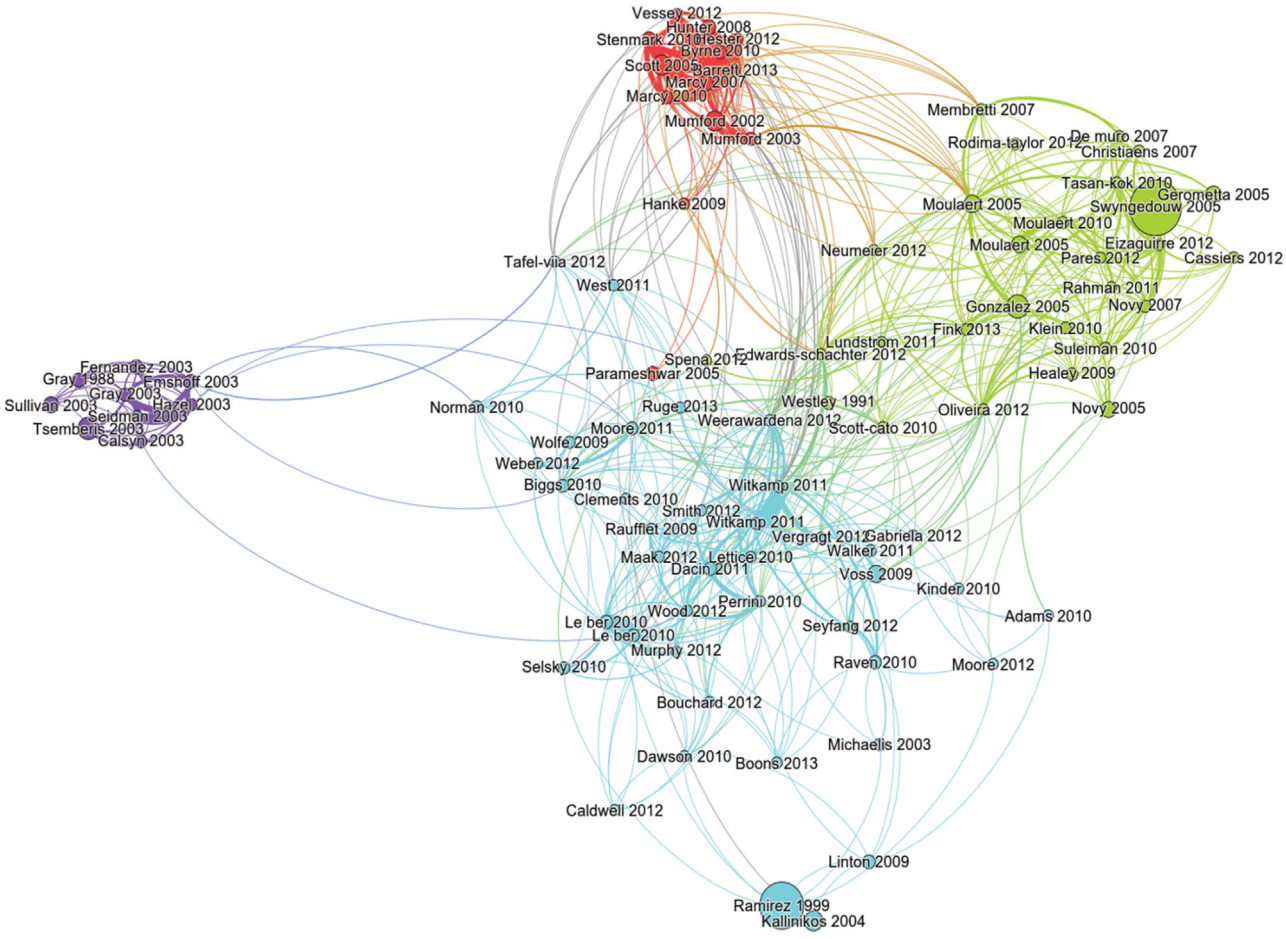

Fig. 2. Bibliographic coupling map of the literature on Social Innovation.

consisted of only two papers each, and were therefore not considered a meaningful intellectual community. We therefore omitted these two isolated diminutive groups, leaving four communities as a meaningful modular structure of four distinct but interrelated clusters. After interpreting all the article titles and abstracts within the clusters, we came to the following cluster labels based on their main content: 1.) Community Psychology; 2.) Creativity research; 3.) Social and societal challenges; 4.) Local development. The key metrics of the clusters are presented in Table 1. Based on both the total and relative number of received citations in the scientific literature, clusters 3 and 4 appear to be the most influential of

Table 1
Overview of scholarly communities in the field of Social Innovation.

Cluster name	n	Received citations	Avg. Citations/ paper	Average publication year
Creativity Research	63	2519	40,0	2006,3
Social and Societal Challenges	45	2611	58,0	2009,4
Local Development	35	2171	62,0	2008,7
Community Psychology	14	568	40,6	2004,3
Total n	157			
% of total dataset	91.3%			

the four, especially considering their quite recent average years of publication.

4.2.1. Purple cluster/cluster 1: community psychology

The first cluster is dominated by eight papers in the community psychology literature discussing the Experimental Social Innovation and Dissemination (ESID) model used to promote innovative social and behavioral change. A key issue here for innovation research is how widespread changes manifest in society. The notion of Experimental Social Innovation (ESI) was coined by Fairweather (1967), who approached community psychology by looking for innovative strategies or solutions to achieve social change and solve social problems. "ESID is a multistep process for systematically introducing change in social systems that is grounded in scientific evidence of effectiveness." (Hazel and Onaga, 2003). Ideas from this SI framework appear to have been connected to eco- and natural resource management problems by other researchers in the cluster, as SI in this context can be viewed as a way to tackle complex problems. This research cluster is quite process-oriented.

4.2.2. Red cluster/cluster 2: creativity research

The second cluster of papers that we detected is dominated by research on creativity. This line of work has traditionally examined the creative process of innovation in science and technology, but since the publication of the cluster's key article by Mumford (2002), the field has also taken an interest in understanding the generation and implementation of social innovations. Following Mumford, creativity researchers understand SI mainly as "new ideas about social relationships and social organization" to meet a common goal (Mumford, 2002). As a result of this, we also find works dealing with intrapreneurship and business ethics (corporate social responsibility) in this cluster. Like the previous, this research cluster is more process-oriented.

4.2.3. Blue cluster/cluster 3: social and societal challenges

The blue cluster is formed by articles concerned with SI as innovative solutions to social (-technical) challenges. A dominant and recognizable research theme in this cluster is the sustainability of climate, environment and health provisions. Unsurprisingly, the concepts of Transition Management (Rotmans et al., 2001) and Strategic Niche Management (Kemp et al., 1998) also frequently occur in this strand of literature. Clearly related is the concept of grassroots innovations that likewise re-occurs in this cluster. Other important themes in this cluster are public management and cross-sector alliances/partnerships (e.g. profit – non-profit collaborations). Importantly, this cluster of papers also makes an explicit link between social entrepreneurship (e.g. Weerawardena and Mort, 2012) and SI, focusing on the innovative and non-technological aspects of social entrepreneurship. Besides the more generic, though most-cited strategic management paper on value co-production by Ramirez (1999), one key paper listed in the field's top-20 most cited papers in this cluster is Voss et al.'s (2009) paper on socio-technical transitions. The papers by Weerawardena and Mort (2012) and Witkamp et al. (2011) are also important works, in the sense that they appear as connecting this cluster to both the local development and creativity research clusters.

4.2.4. Green cluster/cluster 4: local development

The red cluster is very much focused on the role of social innovation in local development. The meaning of 'local' in this cluster encompasses communities or neighborhoods, cities and regions, and both urban and rural settings. A frequently reoccurring central theme in papers in this cluster is the role of governance and institutions, as well as the participation, inclusion or empowerment of citizens. Social cohesion or social change is another notable theme, and thus social innovation is commonly understood here as satisfying human needs through (an empowering) change in the relations between local civil communities and their governing bodies. Empirically, the 'local' setting of studies appears to have been a fertile ground for researchers to study the role of institutions and inclusive forms of collaboration in social innovation processes. Key influential works in this cluster are those by Swyngedouw (2005) and Moulaert et al. (2005) , both of which were published in a special issue of *Urban Studies*. Of structural interest are the papers by Moulaert et al. (2005), Membretti (2007) and Edwards-Schachter et al. (2012) , which all strongly link this cluster to the creativity research cluster.

4.3. Relationships between clusters

Our network analysis and descriptions of the intellectual subcommunities in social innovation research already showed that the communities do not exist in isolation. Fig. 3 illustrates how the four scholarly communities are connected through bibliographic coupling. We find the strongest inter-cluster connection between clusters 3 (societal challenges) and 4 (local development). Slightly less densely connected, cluster 2 (creativity research) has a quite balanced connection to both clusters 3 and 4, resulting in a rather strong triangular structure. By contrast, the community psychology cluster (1) is the least well-integrated in the overall network, being only indirectly connected to cluster 2, while still being modestly linked to clusters 3 and 4. Cluster 1 has its strongest, direct connection to cluster 3 (societal challenges). This result is somewhat surprising when we consider the similarities in abstraction. While the works in clusters 1 and 2 are mostly concerned with people in groups, works in clusters 3 and 4 are more focused on understand-

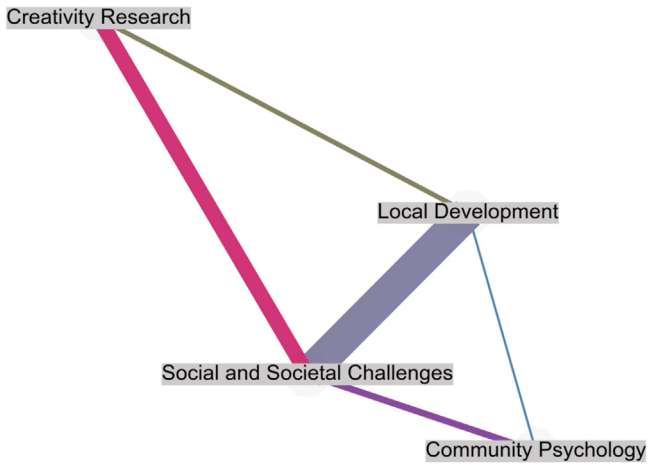

Fig. 3. Inter-cluster bibliographic coupling network of scholarly communities in the social innovation literature.

ing SI at higher levels of aggregation: cities, regions and society in general. There is, however, some overlap in the level of abstraction between clusters 1 and 4, in the form of understanding social change in communities.

4.4. Dynamics

The co-existence of different domains and the rapid expansion of the SI literature raise the question of the development of this literature and possible shifts in trends that may have taken place. We utilize the longitudinal character of our data to look for possible patterns of change over time in the frequency of scholarly activity. This provides insights into how the field of SI changes in terms of contributing research emphasis. Fig. 4 gives a temporal visualization of prominent 'bursts' of scholarly activity in different journals. As a note of caution, our burst detection analysis does not necessarily display the most important (largest) journals or fields.

We can see that leading up to the period of ferment identified in Fig. 1, the journal *Futures* was active for a fairly long period. However, due to the low numbers of annual publications, the lengthy burst does not yet have great volume. Nonetheless, *Futures* appears to have provided a kind of early platform for scholars concerned with SI. Furthermore, it seems that community psychologists discussed the SI concept (and revitalized the ESID model) during the take-off phase in a special 2003 issue of the *American Journal of Community Psychology*, followed by urban- and regional scientists, and only recently have innovation and management scholars been most active in discussing the SI concept. Interestingly, the most recent surge in SI publications is found in the *Journal of Social Entrepreneurship*. Seemingly, the SI concept has provoked increasing explicit attention among social entrepreneurship scholars only as of 2010. This observation is consistent with our finding that social entrepreneurship scholars have not yet been able to construct a very visible, distinct community, but that social innovation appears to be receiving slightly more prominence recently.

More generally, it appears that SI was first experiencing a revival among social psychologists who applied it in the context of communities and the environment, after which the SI concept gained traction among urban and regional scholars, and finally found its way into the work of management and entrepreneurship scholars. These trends can be partly explained by the fact that international research funding programs have played a role in some of the bursts of published works, in particular those from the European Union Commission (EC). For example, the SINGOCOM, FP5 project (2001–2004) on "Social Innovation and Governance in Urban Communities" that had a major influence mainly through the works of Frank Moulaert, largely explaining the burst dynamics in urban and regional studies in 2005–2007. The about 25 EC research projects on social innovation under the SSH FP 6 and FP7, before and after the Innovation Union Initiative, have likely influenced the recent burst dynamics for research on this area.

4.5. Discussion

4.5.1. Analytical discussion

As highlighted in definitional reviews by Moulaert et al. (2005), Pol and Ville (2009) and Dawson and Daniel (2010), as well as a report by The Young Foundation (2012), the application of the SI concept by social scientists has been diverse, leaving some critics to question the validity of the SI concept altogether (Pol and Ville, 2009). This imposes a possible limitation on the development of SI as a research field. It is therefore important to systematically analyze the SI literature for a possible intellectual structure in the SI discourse. To do this, and based on our holistic analysis of social

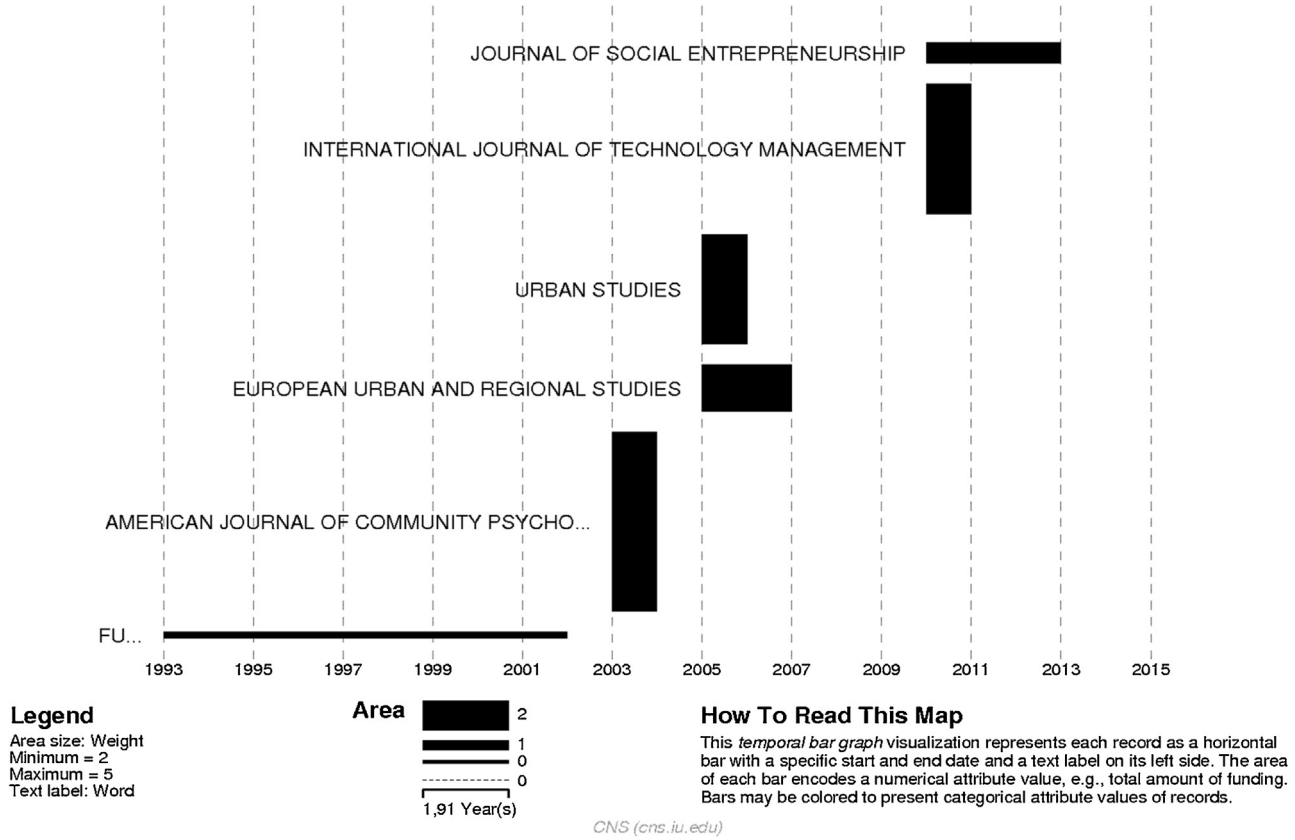

Fig. 4. Temporal visualization of burst analysis for publication activity in journals over time.

Table 2
(a) Tentative organizing framework for Social Innovation research. (b) Commonalities and differences behind SI research approaches.

(a)

SI Research communities	Basic view of SI	Main key themes	Main outcomes	Process vs outcome
C1: Community psychology	Systematic strategies or models (e.g. ESID model) to introduce change in social systems	I.a. eco- and natural resource management	Social and behavioral change	More focused on process
C2: Creativity research	Creative process of generating social innovations; SI = new ideas about social organization to meet a common goal	I.a. intrapreneurship, corporate social responsibility	New social relationships or changed social organization	More focused on process
C3: Social and societal challenges	Innovative solutions to socio-technical challenges or social problems	Sustainability of climate, environment and health; cross-sector alliances; social entrepreneurship	Socio-technical regime transitions Specific solutions	More focused on outcome
C4: Local development	Satisfying human needs through (an empowering) change in the relations between local civil communities and their governing bodies	Governance and institutions; inclusion and empowerment of citizens; urban and regional issues	Social cohesion and change	Balanced focus on both process and outcome

(b)

	Main orientation	Leading research communities
General approach	People and community: Individual behaviors & social values	C1, C2, C4
	Micro and meso level activities	C1, C2, C4
	Holistic: SI understood as a broad phenomenon	C4, C3
	Systemic: role of institutions and policies	C3, C4
Key Objectives	Social change and social transformation	C1, C2, C3, C4
	Social inclusion	C1, C4
	Societal challenges	C3, C1, C4
	Social entrepreneurship	C3
Focal SI means	Methods and organizational models to generate social change	C1, C2
	Co-creation	C2, C3
	Social communities, participation and empowerment	C1, C4
	User-driven, open innovation and co-innovation	C3, C4
Main scientific fields	Psychology	C1, C2
	Sociology	C3, C4
	Urban and Regional studies	C4
	Management and Business	C2, C3

innovation scholarship and the identification of the four scholarly communities, we provide a tentative organizing framework for the literature, presented in Table 2a. This stylized framework describes the key aspects of each intellectual community in SI research in terms of its 1) basic view of social innovation; 2) current key research themes; 3) main perceived outcomes of social innovation; and 4) process vs. outcome orientation. We should note that this organizing framework is a stylized representation of the four communities, as there exist some internal variations on the level of individual articles in each community.

While a very in-depth discussion of each community is beyond the scope of our goals and space limitations, we have identified besides a co-existence of communities also some heterogeneity in each community. We found that it is not possible to allocate strictly exclusive properties to each community. Some approaches are led by one or more clusters, but elements of them can often be found in other clusters as well. For instance, a systemic and institutional element is found in all clusters, but cluster 4 is clearly most focused on this; socio-technical regime transitions are associated as SI outcomes in cluster 3. Similarly, the orientation on SI outcomes (goals) and SI process (means), as well as the 'core' disciplines supporting each cluster are not in all cases strictly exclusive. For instance, in C3 we can also find process issues, but we interpret that the main concern is with solutions to social challenges. C4, on the other hand is very much concerned with collaborative arrangements, governance and change as outcome within the local context, and therefore more balanced between process and outcome.

Due to the fact that we are now able to recognize intellectual communities and organize their key aspects, we can also inform the definitional discourse that we illustrated in section two. All four clusters appear to be in agreement that social innovation encompasses change in social relationships, -systems, or -structures, although this may be approached from different levels of analysis. Furthermore, a quite widely shared idea also appears to be that such changes serve a shared human need/goal or solve a socially relevant problem. Thus, despite the plurality of definitions out there, the literature does appear to share the above two 'core elements', around which any attempt to create an overarching definition for the field should be based. Some definitions already appear to revolve around these components (e.g. Howaldt and Schwarz, 2010). It is worth noting that C3 holds the widest view, including technological change as well. Perhaps it is more useful to think of various schools of thought that emphasize different additional aspects, such as empowerment, or an added technological or economic dimension.

Table 2b provides a systematic overview of commonalities and differences in research characteristics that we found in and across the four scholarly communities, and complements Table 2a.

While Table 2a serves mostly as a basic characterization of each cluster, we can derive additional insights from Table 2b. A first

glance of Table 2b reveals that, generally, the clusters share more commonalities and they have differences. Taken together with the identified conceptual 'core elements', perhaps the issue of ambiguity is not as severe as previously conjectured.

The differences depend highly on which aspect any combination of two clusters are compared. This might explain the perceived high level of ambiguity and confusion documented in the literature. Some notable differences reside in the key objectives. Research in cluster C2 (creativity research) is not much oriented toward social inclusion and societal challenges, while the literature in the other clusters often takes these issues as a main motivation to invoke the SI concept. While most pervasive in its hierarchical scope, cluster C3 (social/societal challenges) appears to have the least number 'general approaches' in common with the other clusters, but does share 3 out of 4 of the 'key objectives' with the other clusters. Thus, there seems an opportunity for researchers of social and societal challenges examine their research questions from a social/human activity and community approach. Another insight is that cluster C4 (local development) is the most (i.e. 3 out of 4) in tune with other clusters in terms of main approaches and objectives. A challenge is to see if this regional and urban studies cluster can continue leading the conceptual integration in social innovation development, or if it will be merely adopting developments from other areas to local contexts. This cluster may also integrate SI research in the context of globalization and large scale networks, despite most of the existing examples being at a local level. The empowerment issue could be a hot research issue in this context. The conceptual position of cluster 4 also suggests that it could also act as an integrator between the social goals (i.e. solving social problems or meeting human needs) and the social means (i.e. changed social structures) of SI. Some contributions and clusters focus more on one side than on the other, but this cluster is an exception (see Table 2a). Future developments may have to take into account both of them, especially if SI definitions are consolidated around the idea of social goals and social means as the two sides of the same SI coin. Cluster C3 builds crucial bridges for future research, not only in terms of being widely connected in the inter-cluster network, but also in terms of its multi-level scope and most commonalities with other cluster in terms of its wider range of objectives. This cluster may lead the development of the mainstream of innovation studies into SI issues. The concrete evidence and testing can be another contribution from this cluster as well as the issues of scalability and sustainability of SI solutions, issues of particular relevance to policy makers. If we also take the results of our network analyses into account, we see that while clusters C1 and C2 appear to be relatively distant from the other two clusters, they do not appear to lack a sufficient number of commonalities in Table 2b. A key challenge for cluster C1 (community psychology) may be its integration in existing innovation studies, but has a potential contribution through its view of the "homo socialis" vis-à-vis "homo economicus". This could be a major contribution to other clusters as well and research on the value constellations behind SI and the balances between bottom-up and up-bottom approaches in SI. Possible future developments for cluster 2 may be its integration into the co-creation and co-innovation literature. An enrichment of the networking theories from SI could also be an outstanding contribution from this cluster where creative participatory processes oriented to social goals are a must. A part of the SI business and management research comes into this and into cluster 3. Cluster 3, social and societal challenges, focuses more on specific SI solutions so the economic content is much higher than in the other clusters.

4.5.2. Conceptual discussion: SI and innovation studies – conceptual bridges

It is well-known that the field of Innovation Studies has traditionally emphasized technological change, product innovations, process innovation and, incorporated more recently, service innovations. These innovation types have been approached primarily as creating use-value as perceived by users or adopters, and exchange value (i.e., the monetary amount paid by the user to the seller/innovator). In other words: what Pol and Ville (2009) term 'business innovations'. This is natural, because various of the early 'core' landmark works on which the field is founded were chiefly concerned with economic change and –growth (e.g. Freeman, 1974; Nelson and Winter, 1982; Schumpeter, 1934). Fundamental in these works is the Schumpeterian[7] view of innovation as a source of value creation, and thus appropriable rent for innovators in so far as imitation is deferred (Teece, 1986). We see possible 'anchor points' in these foundations that can serve as a precondition for theorizing on social innovation within innovation studies.

4.5.2.1. Value creation: who gains from innovation?

While newly created value is imbedded in the Schumpeterian notion of innovation (i.e., inventions that are not deemed valuable by markets will not become innovations), the question of what constitutes value creation is not often the focus of analysis (Lepak et al., 2007). However, an emerging view in the business and management literature is that the creation of economic and social value by firms are not strictly separate or necessarily at odds with each other (Dembek et al., 2015; Elkington et al., 2006; Emerson, 2003; Porter and Kramer, 2011; Ramirez, 1999). We argue that considering social value creation can be a fruitful lens for innovation scholars to understand and incorporate social innovation. First, it has been a long agreed premise in the innovation literature is that generating innovation by organizations can create positive value by improving welfare for societies and nations (e.g. Porter, 1990). The value (co-)created by means of the introduction of a new product, service or process innovation can often not be fully captured by the innovating firm, but might cause a positive spillover to society. This implies that the sources and beneficiaries of value creation can reside at different levels of analysis (Lepak et al., 2007). From this viewpoint, social value in a narrow sense can be distinguished from private value, for example as is the case with indirect positive impacts to society of business innovations such as computer operating software (Auerswald, 2009).

However, many authors have adopted the view that social innovations specifically address societal needs and/or problems and thus contribute to human and social life (e.g. Howaldt and Schwarz, 2010; Moulaert et al., 2005), thereby creating 'social value' by meeting such needs. Schumpeter (1909) already noted the existence of "altruistic or social wants ... taken care of by individuals or their agents, and not by society as such."

Second, the concept of social values can help us understand where opportunities for social innovation come from. Simon (1997) used the term 'social value(s)' for "the objectives of some larger organization or social structure in relation to the 'organizational values' of its components." He viewed social values as a hierarchical phenomenon, with in top society's basic institutional structure attaining to very general values, and group and organizational values at lower levels which are attempted to be in conformity with

[7] In his later work, Joseph Schumpeter (e.g. Schumpeter, 1949) also touched on aspects of innovation and entrepreneurship that are now associated with SI such as new forms of organization (Neumeier, 2012). He also noted the role of innovation in other parts of society besides business and the economy, such as social and political life (Moulaert et al., 2005), and raised the issue of the potentially cooperative nature of the 'entrepreneurial function' (Neumeier, 2012). According to Dees and Anderson (2006) it is however the view of the individual entrepreneur-innovator that has come to dominate the social innovation-centric view of social entrepreneurship, according to which "social entrepreneurs are individuals who reform or revolutionize the patterns of producing social value, shifting resources into areas of higher yield for society." (p. 44).

these general values, which are based on shared ethical premises. Building on Simon (1997) and Lepak et al. (2007), we propose that: given existing, but subjective, shared ethical premises, the level of new social value is determined by the novelty and appropriateness of a contribution to human and social life. From this view, opportunities for social innovation could be seen as emanating from imperfections in reconciling the values at higher and lower hierarchical levels. This could happen when the total of lower level values do not completely meet high level values held in society. Finally, we reiterate that in some cases innovators can partly appropriate the social value created by their social innovations. Thus, a first class of 'bifocal' social innovations (Borzaga and Bodini, 2014; Pol and Ville, 2009) creates positive social value, but is still a business innovation in the sense that it has a monetary value in exchange. A second class is the so-called 'pure' social innovation, which contributes to human and social life, but cannot satisfy needs through the market mechanism (Borzaga and Bodini, 2014; Pol and Ville, 2009). We return to this class later when discussing implications for innovation policy in section 5.2.

4.5.2.2. Social technologies. Modern sociologically oriented contributions to the SI literature have highlighted new combinations of social practices as a key component of social innovation (Hochgerner, 2011; Howaldt and Schwarz, 2010). More recently, the well-matched concept of social technologies has been introduced in the innovation studies literature (Chataway et al., 2010; Nelson and Sampat, 2001). According to Nelson and Sampat (2001), social technologies are similar to physical technologies, but "involve patterned human interaction rather than physical engineering", and they define a social technology as "how knowledgeable people act and interact where the effective coordination of interaction is key to accomplishment". Furthermore, Nelson and Sampat suggest that social technologies can become closely associated with 'institutions' when they become regarded as 'standard' or taken for granted by the relevant social group. An illuminating example is provided by Chataway and colleagues, who use the social technologies framework to explore the cases of the International AIDS Vaccine Initiative (IAVI) and Malaria Vaccine Initiative (MVI) "to understand the interactions between the creation of a tangible technology (new preventative AIDS and malaria vaccines) and the social technologies (the mix of organisations which will undertake the work)" which create social value (Chataway et al., 2010).

In sum, we believe that a more familiar conceptualization of SI for scholars in innovation studies is to view them as novel social technologies that create new social value. Here, social value assures that the innovation is in use, similar to the 'market' adoption requirement of technological innovation to distinguish it from technological invention. As we suggested, social value is determined by the degree of novelty and appropriateness of a social innovation's contribution to human and social life.

4.6. Significance of results

The results of the detailed analysis of the intellectual structure of the field and its current development are first and foremost of interest for scholars who want to contribute to the further advancement of the SI field by constructing theoretical frameworks. Awareness of the field's intellectual structure, as demonstrated by the communities revealed in this research, may help improve researchers' ability to identify and formulate adequate conceptual building blocks, as well as setting boundary assumptions in the construction of such a framework. The results in terms of the identified commonalities and the shared two core elements of SI should be taken into account in future efforts to develop conceptual or theoretical frameworks of SI. Such frameworks or models could leverage also our finding of the complementarity of the communities in terms of process and outcome orientation, and encompass the multiple levels of analysis that we identified for the four communities. Secondly, the results are also relevant to empirical researchers' ability to position their contributions vis-à-vis the identified scholarly communities. This will support the accumulation of knowledge. Thirdly, it is now possible to identify linkages between the four communities and perspectives in innovation studies, which may make our work informative to innovation studies scholars who are interested in assimilating SI in their existing frameworks, such as that of national or regional innovation systems or creativity perspectives. We already touch on some of these linkages in the final section. Lastly, we believe our results will be helpful for the most recent audiences behind the upsurge of interest in social innovation: management and entrepreneurship scholars. It is important for these groups to be aware of the structure, scope, dynamics and history of the SI field for fruitful incorporation of SI in their extant frameworks or in the development of new theory.

5. Conclusions and implications for research and policy

5.1. Conclusion

The existence, process and beneficial outcomes of social innovation have been documented by scholars for many years: first sporadically, but during the last decade attention has increased sharply with the concept also diffusing into the policy and practice domains. Yet, research on SI has been criticized for being fragmented, non-cumulative, while the SI concept itself has been ambiguous due to a plurality of definitions, perspectives and research settings. To date, no systematic overview of this rapidly emerging area has been published which is based on bibliographic data and independently of disciplines. To promote a clearer and more complete understanding of the emerging SI field and to encourage better accumulation as well as integration of knowledge, this study has used bibliometric analysis to chart the dynamic trajectory and current intellectual structure of the field of social innovation research.

Results showed firstly that social innovation has a relatively young and unsettled history, in which different approaches coexist, although the four identified communities create some organized structure on its way to being considered an emerging field. Secondly, it constitutes a research area in which inter- and multidisciplinary approaches have an important role to play, given that the existing research communities largely entail different disciplines (and their familiar levels of analyses), and there is some evidence of cross-community research. Thirdly, SI is an eclectic area, since differences still prevail also within the same research communities, revealing some intra-group fragmentation The specific substantive topics, such as health, sustainability, or the third sector, are not the main cause of community formation. Fourth, and perhaps most important, the SI has an important commonality in sharing two 'core conceptual elements': SI encompasses 1) a change in social relationships, -systems, or -structures, and 2) such changes serve a shared human need/goal or solve a socially relevant problem. We suggest any attempt to create an overarching definition for the field should be based on these two common components, but different schools of thought might add dimensions (e.g. empowerment) or emphasize one of the components. In line with these findings, we proposed that innovation scholars can approach SI conceptually as novel social technologies that create new social value.

It is important to stress some caveats to our empirical findings and analysis. We already noted the limitations of bibliometrics. A further limitation is that our keyword-based sample selection may have lead to omission of literature that deals with phenomena

that are conceptually similar to social innovation, while not using the term itself, such as 'community innovation', 'grassroots innovation', etc. Future review studies should examine the connections between these related concepts in the literature. As we noted earlier, our coverage of the literature is also limited by the fact some important SI literature is published outside the English language journals included in the WoS data base. Further research may try to examine this more disperse literature and how it relates to our findings in this study. It is also important to highlight that a potentially significant channel for SI research, as an emerging field, may be a less formal data source, such as the Social Science Research Network (SSRN), which we omitted in this study. Another well-known problem we also recognize that our dynamic analysis is very limited due to the small size of our dataset for longitudinal analytic purposes. Finally, because SI is such a rapidly growing literature, our empirical results may not hold far into the future.

5.2. Implications for research and innovation policy

Finally, we identify a number of promising avenues for future research. We found that community psychology and creativity research on SI is relatively more isolated in the network of scholarly communities. Future SI-research should capitalize on the identified commonalities these two literatures share with the other clusters, and utilize the insights from these more process-oriented studies. For example, scholars could explore the usefulness of the ESID model in new SI contexts such as its potential role to facilitate transitions from the micro to the meso level for tackling societal challenges. Indeed, our study concurs with Dawson and Daniel (2010) that SI is a multi-level phenomenon, and thus each of the identified intellectual communities could be explored by researchers in innovation studies. Hopefully our analysis and conceptual tools could help these researchers to start studying these new kinds of innovation processes. To be sure, we already identified some extant rudimentary linkages with the literature on socio-technical (sustainability) transitions. More research is needed to get a better understanding what causal role social innovation plays in shaping, accelerating or decelerating change trajectories.

A useful and classic theme, though currently under-researched, appears to be the question how SI can be used to compliment technical change. While important foundational ideas for this have been expressed (e.g. Ogburn and Duncan, 1940), more detailed theoretical as well as empirical work on the complementarities between SI and technological change could benefit the innovation studies literature (cf. Geels, 2004).

Our analysis showed the presence of a strong intellectual component from sociology in the theoretical construct of SI. We therefore see a fruitful opportunity for institutional scholars. For example those who aim to understand the role of institutional entrepreneurship in innovation (e.g. DiVito, 2012), could apply the lens of SI and the concept of social technology. How do social innovators adapt their strategies to cope with constraints in the institutional environment. Conversely, another important question is to understand the role of institutions on multiple levels for the creation of social innovations. For example, can they facilitate the identification of social problems by entrepreneurs, organizations or communities, especially in the face of possible multiple, sometimes competing logics? Given the presence of shared norms and values, central questions would be how competing values at varying levels are resolved for successful social innovation, and how social-value creation opportunities are constructed in a multi-stakeholder setting.

Furthermore, the identified presence of a creativity research cluster in the SI literature could be explored by researchers in innovation studies who have recently been interested in the sources of creativity, the role of creativity in innovation as well as people's wellbeing (e.g. Dolan and Metcalfe, 2012; Garcia Martinez, 2015; Sleuwaegen and Boiardi, 2014). Given that social innovations create social value, future research and theorizing on the relationship between innovation and wellbeing should explore the SI lens. Another relevant but unanswered research question is whether the sources of creativity for social innovation differ from those for technological innovation. If these sources would vary, for example on the regional level, then perhaps different policy recommendation could be derived as well.

From a policy perspective, our study is timely as in many countries that pursue innovation-driven growth policies, a broader innovation policy framework is developing or has been called for (Ramstad, 2009; Shapira et al., 2001; Weber and Rohracher, 2012), comprising a shift beyond the traditional, post-war R&D-oriented support for technological innovation. While certainly more policy-oriented research is needed, SI may prove to be useful for policy-makers in addressing grand challenges, such as ageing populations or climate change. Some of these challenges will require broader and systemic socio-technical and/or socio-economic transitions (Weber and Rohracher, 2012), in which SI could play a pivotal role. It is conceivable that second- and third-sector actors as well as social movements can take a leading role as enablers of the experimentation that will be required to find new social innovations that are developed by a variety of actors. An open questions is where there might be a role for active policy in promoting social innovation. Borzaga and Bodini (2014) suggest that this could be the case for 'pure' social innovations which cannot generate financial profit. While they criticize the use of the term 'market failure' because markets include non-profit organizations, we still believe there is merit in this concept to understand the potential need for policy intervention in the SI context. This is because one major form of market failure is the failure of the price mechanism to reflect the benefits of certain innovations (Gustafsson and Autio, 2011), which is the case for many social innovations we believe on basis of the notion that SI's create social value. However, due to the salience of the social relations/social technology element present in SI, also the notion of systems failure (Gustafsson and Autio, 2011; Weber and Rohracher, 2012) may be highly relevant for understanding the need for policy intervention to promote SI. For example, specific policy issues like the scalability of successful SI in small local communities to a higher level and the sustainability over time are of importance here. Future policy research should theorize and empirically explore whether innovation systems can exhibit interaction deficiencies among functions, governing bodies and agents that could inhibit social innovation from reaching socially desirable potential. Again, existing institutions based on economic logics, entrenched power relations and lacking legitimacy could potentially lead to social innovation- and transition failures. Also impediments to social construction and social- technological structuration (Gustafsson and Autio, 2011) could prove to be barriers to socially optimal levels of SI. Policy researchers may find conceptual or empirical junctions to study these issues in any of the four communities in the SI literature. Finally, the notion of social value creation resonates with demand-based policy-making (Edler, 2010). A major challenge here is how demand for social innovations can be articulated, as it is unlikely to produce clear 'market signals'. Well-defined 'social innovation policy' could prove useful for facilitating the scaling-up of locally co-produced social innovations so that they diffuse in society'.

Supplying coordination and resources may be important policy tools to achieve all this, and we caution against using the existence of SI in the private and third sectors as a justification to reduce public sector efforts to support SI and large-scale change.

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