transformative
social innovation
theory

The emergence of social innovation: a translocal perspective

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A TRANSIT Working Paper by: Saskia Ruijsink, Linda Zuijderwijk, Iris Kunze, Julia Wittmayer, Carla Cipolla, Morten Elle, Sarah Rach & Flor Avelino

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transformative **s**ocial **i**nnovation **t**heory

About TRANSIT:
TRANSIT is an international research project that develops a theory of Transformative Social Innovation that is useful to both research and practice. It is co-funded by the European Commission and runs for four years, from 2014 until 2017. The TRANSIT consortium consists of 12 partners across Europe and Latin America. For more information, please visit our website: http://www.transitsocialinnovation.eu/.

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This paper was developed as a cross-case analysis of a selection of the case study material of TRANSIT. The paper focuses thematically on the field of urban studies and the role of space and place in social innovations. The authors of this paper, also made in depths studies of the cases that have been analysed in this paper as part of the TRANSIT research project.

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Authors: Saskia Ruijsink, Linda Zuijderwijk, Iris Kunze, Julia Wittmayer, Carla Cipolla, Morten Elle, Sarah Rach & Flor Avelino

Contact: Saskia Ruijsink, IHS, ruijsink@ihs.nl

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Authors: Saskia Ruijsink[1], Linda Zuijderwijk, Iris Kunze, Julia Wittmayer, Carla Cipolla, Morten Elle, Sarah Rach & Flor Avelino

Abstract

This paper investigates how spaces and places play a role in the emergence of (transformative) social innovation. It draws on theoretical insights from the field of urban studies and geography that have paid much emphasis on the role of space and place in among others, social innovation. This results in a conceptual framing that addresses the importance of (tangible and spatially demarcated) places that are locally rooted as well as the relevance of spaces of translocal connections (that can also be virtual, or not place-based) in the emergence of social innovation. The paper systematically analyses eight case studies of social innovation initiatives and shows how local rootedness and translocal connections have shaped the emergence processes of each. Based upon this analyses it becomes apparent that we can distinguish different emergence patterns. In all those patterns local rootedness and translocal connections are important and there are always interactions between various scale levels, but the relative importance varies. Some social innovation initiatives emerged primarily as a consequence of a locally rooted issues, which were moved forward by a group of primarily locally rooted social innovators. Additionally we have seen social innovation initiatives that were triggered by ideas, or issues that were framed by a group of people who were connected translocally and this idea then 'landed' as a social innovation initiative somewhere, locally. In such a case the innovative initiative was not necessarily linked to the challenges of the neighbourhood that it landed in. Finally we also observed a third pattern where an idea that was formed somewhere e.g. in a university, or within (virtually connected) group of like minded people who got confronted with a (group of) local(s) citizen(s) and that then triggered the emergence of the innovation.

Keywords

Emergence, (transformative) social innovation, space (of flows), place, local (rootedness), translocal (connections)

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[1] Corresponding Author: ruijsink@ihs.nl

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1 Introduction

This paper addresses the spatial dimension in the emergence process of Transformative Social Innovation. It is a working paper developed in the TRANSIT research project which is about developing a middle range theory of transformative social innovation. This theory draws on existing theoretical work in the field of, among others, social innovation and transition studies and on empirical (transformative) social innovation case studies. It defines social innovation as a process in which social relations change and that includes new doing, organizing, knowing and framing and transformative processes as processes in which formal and informal institutions and challenged, altered or replaced (Avelino et al. 2017, Haxeltine et al. 2017, Haxeltine et al. 2016a, Haxeltine et al 2016b, Longhurst et al. 2016)[2]. The empirical cases comprise of more than 70 'local' social innovation initiatives as well as 20 global, transnational networks that act as umbrella's for the social innovations that were subject of study (Avelino et al. 2017; Jørgensen et al, 2016). We have focused on 'emergence' of social innovation in both the theoretical and empirical work within TRANSIT. The most prominent TRANSIT work on emergence is the elaboration of the following proposition:
SI initiatives are locally rooted and translocal connections among local initiatives are important for the diffusion of SI networks. This involves different process patterns of co-evolution of networks and local manifestations and entails spreading of SI that stems from local initiatives, network organisations being significant, or local initiatives creating network organisations by joining together for mutual benefit (Haxeltine et al, 2017, p.57).

This proposition as well as other TRANSIT work approached the emergence process primarily from *temporal* dimension Haxeltine et al. (2017) and Jørgensen et al. (2016) and the focus on *space* has been limited. It has been observed that there is a common interaction pattern that explains the emergence and expansion of (transformative) social innovations: first (mostly local) independent entities form a translocal network, then networks start expanding and lastly a network develops as an organisation that is then active in establishing new SI initiatives (Haxeltine et al., 2017). In order to complement this work, we take a closer look at the variations in the *spatial* emergence patterns in this paper by zooming in on how the spatial local rootedness and the trans-local connections interact in various locally rooted social innovation initiatives. In this paper we do not specifically address and analyse their transformative potential (see e.g. Haxeltine et al 2017 for an elaboration of the transformation focus).

While the field of transition studies, and particularly the multilevel perspective (MLP) have been an important conceptual starting point for the TRANSIT project, this field has only developed a limited understanding of spatial and geographical dimensions of transitions (Geels and Deuten, 2006). Also in the empirical transition work this dimension gets little explicit attention and most of the analyses focus on formation and transformation processes in specific countries, implicitly assuming that sustainability transitions primarily unfold at

[2] TRANSIT approaches social innovation critically however. Increasingly, social innovation is perceived as a potential important driver of societal (BEPA 2010; Avelino et al. 2014) and urban transformations (Longhurst et al. 2016). We argue that it can be, but might not always be able to address societal challenges. Furthermore, we introduce transformative social innovation that is about challenging, altering or replacing existing formal and informal institutions (Haxeltine et al, 2017).

the local level, while in practice this happens also in villages, cities and regions (Smith et al., 2010). An example of an attempt to overcome the limited understanding of the spatial dimension in transition studies is the work of Coenen, Benneworth & Truffer (2012).

Social Innovation is also studied in fields that do have a spatial orientation such as Urban Studies. This is a broad field that is interdisciplinary in itself and by that it offers an excellent starting point for studying the complex interplay of various dimensions, including the spatial one, that are all relevant in the emergence of social innovation. The TRANSIT work draws on cases that have both a strong local as well as a strong global presence and with this empirical basis we have a good foundation to study the interplay of local rootedness and trans-local connections. To date, the dominant perspective in urban studies is that social innovation (SI) is intrinsically locally produced (Moulaert 2007; Moulaert et al. 2005; Brandsen et al (ed.) 2016). Among others Moulaert et al. (2007) perceive it as a highly contextual phenomenon that can only be interpreted 'in an institutionally and spatially embedded way' (Moulaert et al. 2005: 1978). While various scales and power relations are taken into account, the focus, particularly in the emergence process, remains on the locale and the local challenges to which the innovations respond. A study into development patterns by Jørgensen et al. (2016) et al. suggests however, that there various patterns of initiation, growth and development, diffusion and expansion can explain the emergence of social innovation initiatives (SI-initiatives) and that the relative importance of local rootedness and translocal connections varies. Thus, we aim to add another layer to our knowledge in urban studies by zooming in how emergence of social innovation shaped by both local rootedness and translocal connections as well as the interactions between those.

This means that we acknowledge that local issues can play an important role in the emergence of SI-initiatives. Those initiatives react to local and often tangible issues with clear spatial demarcations. However there is physical and digital infrastructure and there are flows between various people, organisations, institutions, SI-initiatives, etc., people are connected beyond the local. As a consequence, people (including social innovators) also define and articulate more abstract challenges and opportunities and this also motivates some to develop SI-initiatives that are not always directly, primarily or fully 'localised'. Therefore, we introduce the notion of 'translocality'. The example of the SI-initiative 'Sharing Gijon' illustrates this. We have observed that its emergence process can be understood by looking at how it responded to local challenges and opportunities, such as municipal budget cuts, high unemployment and a strong sense of community, as well as more general and abstract issues, such as questioning the neoliberal market at large and the promotion of the 'sharing economy' which was articulated by people who were active in the international Shareable network. The initiative emerged because people who addressed and identified issues with a certain local rootedness interacted with people who addressed and identified issues because they had translocal connections. Such empirical observations call for a trans-local view on the emergence of social innovation. Thus, the research question we aim to answer is: *How can we understand the role of local rootedness and translocal connections in the emergence of social innovation-initiatives?*

We conceptualize local and the translocal as expressions of space that refer to experienced spaces (local) and spaces that primarily exist due to their connectivity (translocal)and those spaces can be virtual. We deliberately avoid to use the notion of scale levels as they are often

associated with hierarchical thinking in e.g. administrative scale levels with spatial demarcations. Many political decisions, financial resources and planning permissions follow administrative scale levels and structures which are defined and demarcated by such spatial boundaries such as municipalities, provinces, states, nation states or (parts of) continents such as the European Union. We are not interested to follow those notions of administratively defined spatial scale levels, but we focus on the social and material constitution of *spaces* with the aim to clarify how the locality is positioned within networks operating at different levels. As such we reviewed literature on the role of *space* in social innovation.[3] We complemented our literature review with theory of Manuel Castells and others that is useful for addressing translocality and that is about the 'space of places' and 'spaces of flows'. Even if this theory is not developed for urban social innovation, but for addressing the importance of (the distribution of power) in and between organisations, we considered it relevant for the development of our translocal perspective on the emergence of social innovation. Based on our review we have developed a conceptual framing of the interplay between the local and translocal in the emergence of SI (section 2). This framing is applied to eight cases of SI, as discussed in the methodology (section 3). The empirical analysis (section 4) is followed by providing a threefold complementary perspective on the emergence of SI-initiatives (section 5).

[3] The review is based on a search for 'social innovation' in the abstracts of articles published in various journals in the urban field. Urban Studies provided 46 results, Planning practice research provided 6, European Urban and Regional Studies provided 8, Environment & Urbanization did not provide any results and International Journal for Urban and Regional Research provided 28 results. The search was performed on 15th august 2016.

2 Literature review and conceptual framing

2.1 Social innovation and its local emergence & rootedness

In the broad field of Urban Studies, social innovation (SI) is mainly perceived as being intrinsically local (Moulaert 2007, Brandsen et al. 2016). A key notion, is that SI is perceived to be a 'highly contextual phenomenon' (Moulaert, 2007: 18). It comes into being as a counterhegemonic reaction to failures of top-down planning or policies (De Muro et al. 2007; Christiaens et al. 2007, Novy & Hammer 2007) and to local challenges. The latter includes social exclusion (Gerometta et al. 2005), segregation and the lack of access to resources fulfilling basic human needs, such as nutrition, clothing, housing and medical care (Moulaert et al. 2007; Moulaert & Nussbaumer 2005). It has been argued that social innovations can function as a 'structuring principle for local development', with an eye for the actual historical context and path-dependency of urban development (Moulaert 2000 in De Muro et al. 2007: $; Moulaert et al. 2007: 196, Moulaert & Nussbaumer 2005).
Various authors address in one way or another that "social innovation at the *local*[4] level must be interpreted in an institutionally and spatially embedded way" (Moulaert et al. 2005: 1978). For example, local regimes are considered to have impact insofar they are not 'overruled' by regimes at higher scales (Gerometta et al. 2005: 2016). This is inter alia demonstrated by a case study in Vienna suggesting that SI-initiatives aiming for radical change, need to react to societal context at large (Novy & Hammer 2007:211 – 213). However, because of local 'power games' they may develop rather path-dependent instead. Another study into urban development strategies in Antwerp concludes that local SI-initiatives, exemplified by the local 'BOM' (neighbourhood development cooperation) may disappear when local political landscapes change (Christiaens et al. 2007).
Additionally the importance of developing a relational perspective[5] on SI is emphasized 'innovation in social relations between individuals and groups of humans in communities […] Within a locality, a neighbourhood, a community, a city, a region and so on […]' (Moulaert & Nussbaumer 2005: 49). Gerometta et al. (2005) suggest that the diversity of social relations serves as the context in which cities and neighbourhoods should be viewed. It is these qualities and openness of networks that can change (idem, 2018). As such, there is attention for the translocal connections and for an integrated approach that stresses the 'ensemble of constraints' coming about through various spatial relations (Moulaert et al. 2005: 1975). Moulaert & Nussbaumer (2005) take account of the "history of the locality, the power relations and the spatial scales" (idem: 55) and they demonstrate that "social innovation at the local level only has a chance of being implemented when support networks including public/state agents at other institutional levels are involved" (idem: 61, see for example Novy & Leubolt on participatory budgeting in Porto Alegre 2005). In line with this, Moulaert et al. (2013) also use the concept of 'bottom-linked' in social innovation.

[4] Italics of *local* done by the authors of this paper

[5] The TRANSIT research project also developed a relational perspective on social innovation and it defines social innovation as change in social relations and new ways of doing, organizing, framing and knowing (see e.g.: Avelino et al., 2017; Haxeltine et al., 2017; Longhurst et al., 2016).

This concept addresses the importance of being connected to other, 'higher' (scale) levels, while it also suggests the 'local' as the starting point.
So, within the field of urban studies we observe an acknowledgement that local rootedness and translocal connections play a role in social innovation. However the role that the translocal connections can play in the *emergence* of SI-initiatives is not yet strongly developed. In order to complement this view we thus explore the potential plurality of directions of the relationship between processes that take place at different scale levels (i.e. not starting at 'the bottom') in the emergence of social innovation. Therefore we turn to literature on trans-local networks and relations.

2.2 Translocal connections and the 'space of flows'

Since the 'spatial turn' in social studies in the 1980s and 1990s, social researchers increasingly acknowledge the importance of the intensifying relations across space for understanding local practices and developments. Such relations increasingly cover wider geographical stretches (Held 1995) and extend over larger temporal distances in the 'now' (see for example Giddens 1984, 1979). We choose this perspective to come to a theoretical understanding of a translocal distribution of power as that helps us to see where social innovation emerges.
Such an increase and intensification of relations is highly unequally distributed: power is centralized in some spaces and social relations, whereas other localities are subjected to the decisions made within the powerful relations (Massey 1994: 194). Manuel Castells has published extensively on this topic as to understand how power is distributed locally and spatially. He introduces the notion of the 'space of flows', through which he aims to illustrate how translocal[6] relations, and the power embedded within these relations, contribute to the deployment and success of organizations (1989: 348) and later also how this works for social movements (Castells, 1999). As such, we need to understand the locale from a perspective in which such local *and* trans-local relations interact (cf. Massey 1994; Katz 2010).
In the 'space of flows' the power of organizations is distributed in flows or relations, within which the organizational practices are spatially decentralized, connected and reintegrated through information technologies (Castells 1989). The phenomenon of increased connection explains the ever increasing pace with which spatial barriers implode (Harvey 1990). Connecting technologies (including ICT) enable the *centralization* of worldwide managerial decision-making and the design of organizational procedures and at the same time they enable the spatial *decentralization* of day-to-day management, while being connected to place-dependent components, such as a harbour or mine. The space of flows is constituted by three layers. In the first layer, 'the first material support of the space of flows, is actually constituted by a circuit of electronic impulses', based in information technologies (Castells 1996: 412). In the second place, a layer 'is constituted by its nodes and hubs' (idem), meaning that the network links to specific places (idem: 412), each with a specific and particular function, in which resources are redistributed. In the third place, a

[6] N.B. We suggest the use of 'translocal'; this term is not used by the authors that we refer to in this sub-section. In the next sub-section we explain our choice for 'translocal' further.

layer is constituted by the 'spatial organization of the dominant, managerial elites', in which the elites form their own 'cosmopolitan' society (idem).
Castells argues that the 'space of flows' is increasingly dominating over its counterpart, the 'space of places', in which the specifics of the locale itself are crucial to the emergence, development and fulfilment of organizations. The space of places is the space of every-day living (Borja & Castells 1996); and of the 'historically rooted spatial organization of our common experience' (Castells 1996), organizing 'experience and activity around the confines of locality' (Castells 2002: 554). In the 'space of places', the historical meaning of the locale for the production of goods and services is emphasized. Also McFarlane (2009) addresses the importance of both a local level and 'another' level. McFarlane call this other level the 'translocal' level and he explains: "I am using the prefix „translocal" as an attempt to blur, if not bypass, the scalar distinction between local and global (McFarlane 2009: 567). As such, like the 'urban social innovation authors', Castell's and Mc Farlane both addresses the importance of the translocal connections as well as the 'embeddedness' of local places. But the urban social innovation literature puts more emphasis on the role of local challenges and the inadequacy of top-down policies to address those as drivers for the emergence of social innovation.

2.2.1 Towards a relational perspective on emergence

In line with Avelino et al (2017), Haxeltine et al (2017) and Longhurst et al (2016) we develop a relational perspective on social innovation that takes local rootedness and translocal connections into consideration when studying its emergence. In order to operationalize 'local' and 'translocal' we need to specify and unpack them (see the section on methodology for further details). Local can be used to contrast e.g. regional, national or global. Oosterlynck et al. (2015) use the term 'local social innovation' and they link it to the level of 'local government' (which can be various levels e.g. metropolitan, city or district level) and express that most social innovators focus on the neighbourhood. Moulaert et al. (2010) also suggests that the neighbourhood is very important for social innovation in their important 'locally focused' book 'Can Neighbourhoods Save the City?', even if they do not claim that local is the same as neighbourhood. Conceptually it makes much sense to avoid pinning down 'local' at some kind of spatially demarcated scale level. In in some cases local might be the same as 'neighbourhood' while it can also be the street-level, or at city (district) level for example, in other words, what is local is relative and contextual. However, for our empirical analysis we consider it important to specify local in a way that it helps to structure the data and therefore we do pin it down more rigidly as the neighbourhood level, or a lower spatial scale level. Along those lines of argumentation, we refer to strong local rootedness of a SI initiative when this initiative is strongly rooted in and addresses issues that are important and defined in the neighbourhood (or in a part of it).

As addressed McFarlane (2009) uses the concept 'translocal' to refer to something that goes beyond the local without fixing it at a certain spatial scale level. We use it in a similar way to express that there are connections between various place-based local initiatives and that because of those connections those initiatives operate at higher levels than only the local (or neighbourhood), while we deliberately avoid defining how high those levels are, it is simply higher than the neighbourhood and 'translocal'. This implies that translocal

connections can be connections that go across cities, regions, nations, the globe, etc. and translocally connected SI initiatives have strong ties to people, organisations, ideas, etc., outside the neighbourhood. Therefore such SI initiatives can also address issues that are identified within those connections and those might be less tangible, spatially demarcated and more abstract than the local issues. Summarizing; the local is typically related to the neighbourhood level and is materialized into local rootedness that is place-based, tangible and/ or related to locally quantifiable challenges which are directly experienced by (local) people (e.g. low quality of the housing stock, bad access to health care services, little trust in local leaders, etc.). The translocal goes beyond the neighbourhood (can be city, region, national, transnational, global) and is materialized in translocal connections and it relates to more abstract issues (that also materialize in space locally) which have more systemic and intangible dimensions (e.g. distorted housing market, need for sustainable an accessible public transport and / or decentralized health care solutions, need for transparent governance, etc.). Many locally and trans-locally produced ideas, knowledge, information, resources (including money) and culture travel and their traveling manifests in trans-local relations which are again connected to local 'places' by means of infrastructure. ICT plays a critical role in those connections, but also roads, trains and airlines (transporting people) or the banking infrastructure (facilitating financial streams) are important in increasing connectivity.

We are interested in further understanding the role of both the local rootedness, the trans-local connections and the interactions between them in producing social innovations, or in other words in the emergence process of social innovation initiatives. This results in the following empirical questions:

- What is the role of local rootedness in the emergence of SI?
- What is the role of translocal connections in the emergence of SI?
- How can the interactions between the local rootedness and translocal connections explain the emergence of SI?

3 Methodology

Drawing on the literature in the former section, we developed a conceptual framing that we apply to a selection of eight cases in Europe and Latin America.

3.1 Embedded case-studies of social innovation-initiatives

In our empirical analysis we draw on eight case studies from the TRANSIT project (Jørgensen et al. 2014, Wittmayer et al. 2015) in which we studied, among others, the emergence of social innovation. We have deliberately used an embedded case study approach (Yin 2003, Flyvbjerg 2006). This approach allows for an analysis of various units of analysis at different scales, this creates flexibility, which is important since the appropriate levels and units of analysis of 'emergent' social innovation are not evident at the start of the research (Jørgensen et al. 2014). The TRANSIT case studies followed detailed methodological guidelines that defined key concepts and that laid down minimal requirements for data-collection (Wittmayer et al. 2015). The eight case studies that we selected are all 'local manifestations' of 'transnational networks' of transformative social innovations. Each local initiative case study, we further refer to them as 'urban SI initiatives', since they all operate at an urban level, draws on various data sources and each researcher combined at least: 10-30 (primary/secondary) documents/media outputs; 6-10 interviews of about 1-2 hours and 10-80 hours of participant observation, including different types of dialogues and interactions (ibid: 24).

We selected eight SI initiatives that operate in the urban context and that:

a) manifested at the neighbourhood level thereby responding to local challenges or opportunities, thus allowing us to assess the role of local rootedness in its emergence;
b) are connected to numerous loose networks that operate at various levels beyond the local, so transnationally. Additionally they are connected to seven more or less institutionalized transnational social innovation networks.

Since we focus on space, we analyzed cases that are all place-based, however, they differ in the way they create and use space; for some physical space is very important for instance as medium of work and interaction, for others much less. Eight case studies allowed us to cover a rather wide breath of urban SI initiatives, without comprising too much on the depth.

We selected the following social innovation initiatives:

- The Polimi DESIS lab in Milan, Italy, which is a member of the global Design for Social Innovation and Sustainability (DESIS) network
- Eco and co-housing district Vauban in Freiburg, Germany, a member of the International Co-Operative association on the production of sustainable habitat as well as the Ecovillage network
- Impact Hub Rotterdam, the Netherlands a member of the Impact Hub Network

- Impact Hub Sao Paulo, Brazil a member of the Impact Hub Network
- The Copenhagen Energy and Environment office (KMEK), Denmark which is a member of the international network of sustainable energy NGOs (INFORSE)
- Participatory Budgeting Amsterdam, the Netherlands which is member of the International Observatory on Participatory Democracy (OIDP)
- Sharing Gijon, Spain which is related to the Sharing Cities Network
- Living Labs Stratumseind2.0 in Eindhoven, the Netherlands; part of the living lab Eindhoven which is a member of the European Network of Living Labs (ENoLL)

3.2 Congruence Analysis

We compared the cases using a Congruence Analysis approach, which can be used for "drawing conclusions from the explanatory power of theories in more or less 'crucial' cases to the relevance of theories in the scientific discourse (Blatter & Haverland, 2012, p.15)," this will help us to develop a framing that is based on the complementarity of the explanatory merits of different theories (ibid). We did this by addressing the local rootedness in the emergence of social innovation as well as the translocal connectedness. In order to do so we have done the empirical analysis of the cases based on secondary material as documented in Ruijsink and Smith (2016), de Majo, Elle, Hagelskjær Lauridsen & Zuijderwijk, (2016), Elle, Gameren, Pel, Aagaard and Jørgensen (2015), Wittmayer, Avelino & Afonso (2015), Picbea, Kunze, Bidinost, Phillip & Becerra (2016), Cipolla, Afonso, Wittmayer, Bibiana & Rach (2016), Cipolla, Afonso & Joly (2015).

Field of Study, main ideas, Authors	**Explanatory mechanisms highlighted for this study**	**Key Questions**
Urban Studies, Social Innovation Local emergence, need for institutional embedding	The experiences around / of local issues are used to explain emergence of social innovation Local issues are not isolated, but embedded Local is interpreted as 'neighbourhood level'	What is the role of *local rootedness* in the emergence of SI?
Geography, Social Movements Interplay between local and networked dimensions	Space of Places (local) and Space of Flows (networks) are connected and both explain the emergence of social	What is the role of *translocal connections* in the emergence of SI?

	movements with increasing dominance of 'space of flows' Translocality addresses the connections between various place-based local initiatives Translocal goes beyond the local, or the neighbourhood, while the level is not defined, so it can be regional, national, global, etc.	How can the *interactions* between the local rootedness and translocal connections explain the emergence of SI?

Table 1: Guiding Questions for Congruence Analysis of 8 urban social innovations

Source: developed by authors

3.3 Operationalization

The empirical questions around local rootedness and translocal connections are broken down in a number of sub-questions that guide the analysis of the eight cases. We will address the following issues:

1. Challenges and opportunities that triggered the SI emergence that are produced locally and translocally
2. Spatial dimension of local challenge or opportunity and the role of infrastructure and flows in forming ideas translocally
3. Degree of local ownership an degree of translocal ownership
4. Locally based and translocal activities, interactions and outcomes of the SI-initiative

Then we address the interactions between the local rootedness and translocal connections in the emergence of the SI- initiative, by focusing on the following topics:

1. Spatial scale level at which the SI is initiated
2. Whether the SI- initiative initially addressed neighbourhood issues
3. The nature and intensity of interactions between trans-local and local
4. The dominant level of ownership

Based on this operationalization we searched for patterns and worked towards categorizations within our sample of case studies and the findings of this process are presented in the section on the empirical analysis.

4 Empirical analysis: the emergence of social innovation initiatives

This section presents the outcome of the empirical analysis. It gives examples of empirical evidence and illustrations and also presents a clustering of the diverse empirical insights of the eight case studies. It starts with an overview of the local-level-analysis, followed by an overview of the trans-local-level analysis and it then concludes the empirical analysis with addressing the relations between the local and the trans-local levels. The empirical findings are summarized in tables in each section.

4.1 Local rootedness in SI

1. What is the *local challenge or opportunity* to which the SI-initiative responds?

'Local challenges or opportunities' are tangible or locally quantifiable challenges that are present at the neighbourhood level and some clearly have a spatial dimension. Local challenges are experienced by (local) people who live and experience the challenges (or opportunities) in their daily lives (during working, living, etc.) such as challenges in access to housing (challenges with tangible dimension) or high concentrations of unemployment in a certain neighbourhood (quantifiable in a defined local place).

Social Innovation Initiative	**Local challenge or opportunity**
Polimi DESIS lab in Milan (Italy)	The Polimi DESIS lab in Milan, Italy is addressing and responding to various local challenges in different neighbourhoods in city of Milan concerning access to public space, access to sustainable food, housing issues, and a lack of social cohesion.
Eco and co-housing district Vauban in Freiburg (Germany)	The eco and co-housing district Vauban in Freiburg, was a response to solve the challenge of limited availability of and accessibility to affordable and sustainable forms of housing in the city of Freiburg. The local catalyst of the socially innovative initiative was a spatial condition: there were vacant buildings/ was a vacant area (former military area) in a specific neighbourhood.
Impact Hub Rotterdam (Netherlands)	The foundation of the Impact Hub Rotterdam was triggered by the need of (young) social entrepreneurs of the city of Rotterdam that were searching for flexible office space and for connections with like-minded.
Impact Hub Sao Paulo (Brazil)	The Impact Hub Sao Paulo similarly responded to a need for office space for social entrepreneurs of Sao Paolo, at city level, who wanted to work

	in a 'free' way and they settled in a space in a neighbourhood that seemed to fit, they did not react to any neighbourhood challenges.
The Copenhagen Energy and Environment – KMEK (Denmark)	In the case of The Copenhagen Energy and Environment office, a number of residents of the city of Copenhagen experienced that there was limited local awareness on the need for 'green' technology in the city and they also settled in a space that was available and at a strategic location.
Participatory Budgeting Amsterdam (Netherlands)	Participatory Budgeting Amsterdam emerged on the one hand from the opportunity of increased attention of the local government for more understanding and transparency of the governmental budget and civic participation in policy making. On the other hand the neighbourhood, 'the Indische Buurt', was dealing with issues like liveability, low income groups, low education levels while also strong social capital (in the sense of active citizen groups) was present.
Sharing Gijon (Spain)	Sharing Gijon emerged to address challenges like budget cuts of local government, unemployment and food security which are experienced at the neighbourhood level. They also respond to the strength of the local community in terms of their capacity to self-govern, their co-operative spirit and ability to share resources between local residents.
The Living Lab initiative Stratumseind 2.0 in Eindhoven (Netherlands)	The Living Lab initiative Stratumseind 2.0 in Eindhoven is responding to the local challenge of a high concentration of violent incidents (e.g. fights) during the night in the street Stratumseind (that is even at a 'lower' spatial scale level than the neighbourhood: at street level), which is a street that is famous for its bars and nightlife.

Table 2: Introduction of the case studies

Source: developed by authors

Based on this, we have identified four types of local challenges and opportunities to which the SI-initiatives under study respond to:

I. Access to space in neighbourhood
II. Access to resources (e.g. finances, employment, healthy food)
III. Local community issues, e.g. social cohesion and criminality
IV. Need for improved local governance (e.g. increased transparency, more political influence for residents)

2. What is the *spatial dimension* of this local challenge or opportunity? Or in other words: (how) does the challenge or opportunity manifest itself into space?

Some of the local challenges or opportunities clearly manifest themselves in space. Creating space then becomes part of the SI and this makes the SI- initiative tangible and visible locally, in the neighbourhood.

Social Innovation Initiative	Spatial dimension of local challenge
Polimi DESIS lab in Milan (Italy)	The challenges and opportunities that Desis Lab responds to have strong links to the local territory and include the need for more and better public space (also for food production) and for housing. The DESIS Lab performed a leading role in developing the first co-housing initiative in Italy, that was enabled also by the design approach promoted by the Lab and that became an example also to tackle issues related to social housing. Other example is the project Nutrire Milano – Feeding Milan that was set in the peri-urban region of Milan, a fringe area challenged by building speculation, where urban sprawl is also blurring the boundaries between city and countryside and agriculture is suffering because it is no longer profitable. Shortening the food chain by de-mediated services, fostering multi-functionality in the systems, and implementing collaborative practices were the key concepts of the project.
Eco and co-housing district Vauban in Freiburg (Germany)	After the French military left the city, a highly attractive large central area suddenly became available. Through a vibrant and professional initiative by the civil society, the City council had to include them. In participatory processes, guided by the city council an innovative framing was organised for planning a residential owned, ecological and communal district with providing space for co-housing projects. Vauban is the result of self-empowered and participatory citizen planning responding to the need for space for affordable and eco-friendly housing and living.
Impact Hub Rotterdam (Netherlands)	The Impact Hub Rotterdam responded to the need for working space for social entrepreneurs (Impact Hub members) with a specific spatial quality important for its functioning and throughout the years got connected more closely to other neighbourhood issues.
Impact Hub Sao Paulo (Brazil)	Like in Rotterdam, the Impact Hub Sao Paulo also responded to the need for working space and settled in a former industrial area without connections to the neighbourhood.
The Copenhagen Energy and Environment – KMEK (Denmark)	KMEK's challenge was not spatial, but in its office the common space was essential for group creativity and identity. Originally KMEK thought that the spatial dimension was essential in relation to the connection with the neighbourhood, but they learned that it was less important.

Participatory Budgeting Amsterdam (Netherlands)	Participatory budgeting Amsterdam provided mechanisms for residents to make choices about budget allocation for (upgrading of) housing, community and meeting spaces, and public space through urban renewal. Citizens made their own citizen budget/agenda for the neighbourhood (new doing), they gained knowledge about municipal processes and skills through participatory processes (new knowing). The municipal budget opened up as terrain for citizen participation (new framing) and participatory processes for monitoring and controlling the budget were developed (new organizing).
Sharing Gijon (Spain)	For Sharing Gijon local meeting places (bars in every block) are important spatial manifestations of the presence of strong social capital (opportunity) at the neighbourhood level.
The Living Lab initiative Stratumseind 2.0 in Eindhoven (Netherlands)	The Stratumseind 2.0 Living Labs initiative responded to challenges that take place in public space (violence) and that also are triggered by spatial issues since the street is partly in physical decay (vacancy, dilapidated buildings).

Table 3: Overview of spatial dimensions of local challenges

Source: developed by authors

The spatial manifestations of the challenges or opportunities to which the various social innovation initiatives that we observed respond, are:

I. Need for affordable living space
II. Need for affordable working & meeting space
III. Need for creating and/ or improving public space

3. What is the degree of *local ownership* in the Social Innovation Initiative?

In case of high or strong local ownership of the social innovation initiative there are local people (or: people based within the neighbourhood) who experience a local challenge and who are also 'owners' of and 'drivers behind' the social innovation initiative and the initiative typically aims to empower the majority of the local people. In case of low local ownership the SI-initiative is initiated by people 'form outside the neighbourhood' and it does not directly respond to local challenges of local people.

Social Innovation Initiative	**Degree of Local Ownership**
Polimi DESIS lab in Milan (Italy)	In the case of DESIS the local challenges are identified by (non-local) DESIS designers in co-production with local actors. The DESIS team ('non-local' designers) aims to trigger new initiatives or support

	existing ones, but always devising exit strategies to minimize or to end their participation with the aim of leaving the ownership at a neighbourhood level. The local challenges are identified by the DESIS team in co-production with local actors.
Eco and co-housing district Vauban in Freiburg (Germany)	Vauban eco-district encompasses a strong local ownership because the initiative was taken (partly squatted) by local (eco-minded) people in search of housing. The civil society forum managed to set up a highly professional organisation with experts and financial supports. Still, the city council was the planning authority (of course based on the frames of building laws). The civil society 'Forum Vauban' was included, but had to work for their influence and empowerment of the residents, e.g. for getting priority in purchasing land and real estate.
Impact Hub Rotterdam (Netherlands)	The Impact Hub Rotterdam has been initiated by entrepreneurs who are not residents of the neighbourhood. Additionally, its members are not necessarily living in the neighbourhood in which the working space is located. However, the Impact Hub aims to have local (neighbourhood) impact and connecting to local organisations.
Impact Hub Sao Paulo (Brazil)	Impact Hub Sao Paolo focuses on social entrepreneurs of the entire city, not on 'local challenges' in neighbourhood of the Impact Hub.
The Copenhagen Energy and Environment – KMEK (Denmark)	KMEK is not initiated by local residents, but by professionals at city level and it did not manage to create a strong social ownership. Only a few hundred local people became involved, but they did not 'own' the initiative.
Participatory Budgeting Amsterdam (Netherlands)	Participatory budgeting Amsterdam built a strong local ownership. The local community played a key role in the Participatory Budgeting initiative after being exposed to it via an international exchange project (see empirical section about the trans-local perspective). Eventually this led to a new way of organizing the neighbourhood plan - an administrative plan of prioritizing themes and municipal activities – in which citizens of the Indische Buurt are now structurally involved.
Sharing Gijon (Spain)	Sharing Gijon was active in trying to connect various local sharing initiatives and public goods, but local ownership for doing so in more formal and structured manner is limited.
The Living Lab initiative Stratumseind 2.0 in	Living lab Eindhoven developed a strong local ownership as it was initiated and developed by a newly established collaboration between local residents, pub-owners, municipality and police, that also was part of the essence of this SI since it was a new form of organising.

Eindhoven (Netherlands)	

Table 4: Overview of degree of local ownership

Source: developed by authors

The degree of local ownership of SI initiative ranges in strength, we have identified 3 levels of intensity:

I. A strong degree of local ownership, where local residents typically initiate an innovation and / or where the local residents promote it further and make it sustain
II. An intermediate degree of local ownership where local residents plays some role in creating and sustaining the innovation, but the role is not very strong
III. A weak degree of local ownership where local residents plays a very limited or no role in creating and sustaining the innovation

4. In what type of locally based activities and interactions between (local) people has the social innovation initiative resulted?

Social innovation initiatives respond to (local) challenges or opportunities and by doing so they generate and promote interactions and they carry out certain activities, in other words, they work on new (locally based) doing, organising, framing and knowing (Haxeltine et al 2017) which typically at the essence of their innovation.

Social Innovation Initiative	**Locally based activities and interactions**
Polimi DESIS lab in Milan (Italy)	The DESIS team ('non-local' designers) operates in the city of Milan by designing services that promote a shift from managerial and marketing frameworks in services (based on the passivity of clients in service provisions) to the design of collaborative services, i.e., services developed to operate based on an active and collaborative role for participants to co-produce a commonly recognized result. Main areas of activity include, food production and housing and the development of experimental spaces in which citizen participation and collaboration is fostered and innovation in the public realm is pursued. The collaborative approach to services and the participation of locals in co-design processes are essential aspects of this SI.
Eco and co-housing district Vauban in Freiburg (Germany)	The Vauban eco-district resulted in (new) social interactions between local residents and city-level actors and it created (new) social and ecological value for free highly attractive space which was protected from other, profit-oriented and non-eco investors. This resulted in a city district space of new, green and communal life quality, which then

	increased also the real estate prices. Some housing cooperatives protect the prices and have social criteria for new memberships instead.
Impact Hub Rotterdam (Netherlands)	Impact Hub Rotterdam members as (non-local) professionals engage with local residents in various neighbourhood based activities.
Impact Hub Sao Paulo (Brazil)	The (non-local) professionals in the Impact Hub Sao Paolo do not interact with local residents but rather focuses on social entrepreneurs of the entire city.
The Copenhagen Energy and Environment – KMEK (Denmark)	KMEK failed with its original idea of having a meeting place for the citizens of Copenhagen. It was hard to connect to local people and issues. The office was used to connect to other 'green' organisations and stakeholders. KMEK was, however, successful in creating outreaching events, resulting in local transitions, for instance local energy savings.
Participatory Budgeting Amsterdam (Netherlands)	Participatory budgeting Amsterdam promotes transparency in decision making and budgeting and allows local residents to be part of it. Local residents take part in budget monitoring activities and in doing so develop new relationships with civil servants.
Sharing Gijon (Spain)	Sharing Gijon promotes local sharing initiatives, and public goods, and tries to connect local residents by doing this as to solve locally experienced problems, such as poverty and loneliness.
The Living Lab initiative Stratumseind 2.0 in Eindhoven (Netherlands)	The Stratumseind 2.0 living lab initiative in Eindhoven actively worked on new organizing with its collaborative approach (see table 4). They invest in bringing various neighbourhood and city level actors, including users of the nightlife street and designers, together for improving the functioning of social life in public space. This involves new doing such as experimental design of terraces that should enhance social safety. Additionally the lab invests in knowing by educating, sensitizing and empowering youngsters, who go out in Stratumseind, on privacy issues that are caused by their social media use.

Table 5: Overview of locally based activities and interactions

Source: developed by authors

We have observed the following locally based interactions and activities:

I. Promote interactions between ('non-local') professionals and local residents and other locally based actors (empowering 'locals')
II. Using and claiming space for action with a local value
III. Creating mechanisms for more transparent and/ or sustainable local resource use

4.1.1 Local rootedness in SI emergence summarized

Based on the empirical analysis we present an overview table that summarizes how local rootedness can explain the emergence of the eight urban SI-Initiatives. It shows that in most case studies the local rootedness is important for explaining the emergence of the SI initiative, but not always and also the explanatory power varies across cases. We have observed in the cases of the Impact Hub in Rotterdam and Sao Paulo particularly that the local ownership is low and that the initiatives did not clearly react to issues that were strongly rooted in the neighbourhoods in which they are located.

Categories and subcategories **SI Initiative**	**Local challenge/ opportunity to which SI initiative responds – trigger** **1. Access to space in neighbourhood** **2. Access to resources (e.g. finances, employment, heathy food)** **3. Local community, social cohesion (prevent criminality)** **4. Need for improved local governance**				**Spatial dimension of challenge:** **1. Need for affordable living space** **2. Need for affordable working & meeting space** **3. Need for creating and/ or improving public space**			**Degree of local ownership of SI initiative** **From:** **1 (strong) to 3 (weak) (shades of grey)**	**Type of locally based activities and interactions between (local) people - outcome** **Types:** **1. Promote interactions between ('non-local') professionals and local residents and other locally based actors (empowering 'locals')** **2. Using and claiming space for action with a local value** **3. Creating mechanisms for more transparent and/ or sustainable local resource use**		
	1	2	3	4	1	2	3	Degree1 to 3	1	2	3
The Polimi DESIS lab in Milan, Italy	X	X	X		X		X	1	X	X	
Eco and co-housing district Vauban in Freiburg, Germany	X		X	X	X		X	1	X	X	X
Impact Hub Rotterdam, the Netherlands	(X)*					X		3	X	X	
Impact Hub Sao Paulo, Brazil	(X)*					X		3			
The Copenhagen Energy and Environment office (KMEK), Denmark	(X)*	X					X	2		X	
Participatory Budgeting Amsterdam, the Netherlands		X	X	X	X	X		1	X		X
Sharing Gijon, Spain		X	X				X	2		X	
Living Labs Stratumseind2.0 in Eindhoven, the Netherlands			X				X	1	X	X	

Table 6: Summarizing how local rootedness explains the emergence of various social innovation initiatives

Source: developed by authors - *In the case we use (X) this category only partly applies. In the case of the local challenge, this means that the opportunity of available space materializes in a neighbourhood, while the challenge or need (for space) is identified at city level.

4.2 Trans-locality in SI

The following section addresses how translocal connections can explain the emergence of urban social innovation initiatives. It focuses on four questions around 1) trans-local challenges; 2) role of networks, technology and infrastructure; 3) degree of ownership at trans-local level and 4) resulting trans-local activities and interactions. It starts with short narratives n each cases studies and it presents a table that classifies answers and summarizes them at the end of this section.

1. What is the translocal challenge or opportunity present and articulated to which the SI-initiative responds?

Translocal challenges or opportunities are experienced and articulated beyond the neighbourhood level; in connections between localities or at the level of the city, region, national, transnational, global, etc. The issues are typically more abstract issues. Even if such abstract issues materialize in space locally, they also relate to more systemic and intangible challenges and opportunities including ideas.

Social Innovation Initiative	**Trans-local challenges and opportunities**
Polimi DESIS lab in Milan (Italy)	The DESIS Lab developed ideas about design, governance and collaborative service delivery and about how ICT connects people and supports visual expression for imagining the future in DESIS projects and activities. The DESIS Network operates through thematic clusters that gathers DESIS Labs from many countries to exchange knowledge about new ways of doing, framing, organizing and knowing around common trans-local challenges, e.g. from their local experience on food, Polimi DESIS Lab is leading a thematic cluster to promote design knowledge for social innovation and sustainability in the food systems. A key trans-local challenge for DESIS Network members is to change the way the Design discipline is taught and practiced all over the world: from a promoter of unsustainable and consumeristic practices to a promoter of transformative social innovation processes, with focus in initiatives at a local level (neighbourhoods and cities). The thematic clusters in DESIS Network is an example: it aims to feature new approaches to Design theory and practices in different areas.
Eco and co-housing district Vauban in Freiburg (Germany)	The local model project of Vauban has inspired local municipalities all over the world and received political attention and funding from national and transnational levels. It is used as a 'real world' laboratory

	with its innovative framing, knowing and doing in future urban research and by transnational networks and movements promoting sustainability, ecology challenges and participatory planning processes in urban development.
Impact Hub Rotterdam (Netherlands)	The founders of the Impact Hub Rotterdam in the Netherlands responded to trans-local challenges that were articulated amongst others through networks such as Pioneers of Change and the emerging ideas and discussions around an Impact Hub network. It identified social entrepreneurship as a solution to work towards a more just economy and society.
Impact Hub Sao Paulo (Brazil)	The Impact Hub Sao Paulo in Brazil similarly to the one in Rotterdam responded to the trans-local challenge and opportunity that is defined as a need for social, sustainable economy and more entrepreneurial freedom.
The Copenhagen Energy and Environment – KMEK (Denmark)	The Copenhagen Energy and Environment office (KMEK) in Denmark is responding to a transnational challenge expressed as the need for green energy and technology. To some extent, the office functioned as a showroom for new green solutions and a centre for creating new ways of organizing energy solutions, including renewal of buildings.
Participatory Budgeting Amsterdam (Netherlands)	Participatory Budgeting Amsterdam in the Netherlands responds to a transnational struggle for democracy and transparency. Additionally it is grounded in a (trans)national search for new roles of state, market and community after welfare state reform. As such it is in search of new ways of organizing society.
Sharing Gijon (Spain)	Sharing Gijon in Spain addressed a need for an alternative development path for deindustrialized secondary cities that are outside international investment flows. Even if there is a strong 'local component' to this it is addressing to a transnational need for an (alternative) sharing economy.
The Living Lab initiative Stratumseind 2.0 in Eindhoven (Netherlands)	The Living Lab initiative Stratumseind2.0 in Eindhoven in the Netherlands responds to a global trend promoting the living lab and smart city paradigm which focuses on the use of ICT and data on experimentation and on generating connections between people. This is essential for this SI. Even if the participatory approach of the living lab, focusing on connecting people, is not new in urban planning and development, the way that it is framed in the lab approach new. Furthermore, there is much new knowledge on ICT and data in urban

	planning and development and this knowledge is constantly upgraded in real-life experimental ways (e.g. in this living lab) and this is thus entails new knowing and organising.

Table 7: Trans-local challenges and opportunities

Source: developed by authors

The challenges and opportunities identified at the trans-local level typically have a strong and clear national, global or transnational dimension and often relate to more abstract ideas such as 'depletion of fossil fuels', 'welfare state reform' and concepts such the 'smart city' or 'sharing economy'. Even if those ideas also have very local and tangible manifestations it is important to recognize that they are also defined and articulated in a more abstract form as concepts that enhance change. Those more abstract ideas are also motivators for the SI-initiatives. Based on the cases reviewed we have identified the following categories of 'trans-local challenges':

I. Economy
II. Ecology, sustainable ways of living and climate change
III. Technology
IV. Democratic participation
V. Collaborative action
VI. Social Entrepreneurial interests

2. What is the role of the networks to which the social innovations belong and of facilitating technologies and infrastructure in the formation and formulation of ideas of the Social Innovation Initiative?

Where social innovation manifest in space locally, they also use trans-local connectors (infrastructure) that link different localities to each other. So actually the presence of infrastructure is an important trans-local spatial dimension, even if the infrastructure can be partly intangible as is the case in ICT it is all about creating (virtual) interactions in and across space. Infrastructure also facilities the formation of networks, these networks are also (at least partly) intangible, but they do represent the 'space of flows'.

Social Innovation Initiative	**Role of networks and infrastructure**
Polimi DESIS lab in Milan (Italy)	ICT connects people and supports visual expression for imagining the future in DESIS projects and activities. The ideas that are underlying the local interventions are mostly produced at the level of the Politecnico di Milano based DESIS Lab, or at other local Labs (the Network connects more than 40 design schools all over the world) and with the DESIS international network group itself. Ideas grow by sharing them and building on them further collaboratively. This is done through the DESIS thematic clusters and other joint

	initiatives developed in the Network and it is done by making use of ICT infrastructure mainly.
Eco and co-housing district Vauban in Freiburg (Germany)	There is a concentration of 'eco-mindedness' in Freiburg and it can be considered as a snowball effect of connections, strengthened by the international office of ICLEI secretariat since 1990 which is part of the institutional infrastructure in the city that is connected trans-locally. Vauban is also connected to larger movements like transition towns and it is a member of the Global Ecovillage Network (GEN). Vauban emerged in the context of the anti-atomic-movement. The housing cooperatives in Vauban are organisationally connected to the cooperative housing networks. Infrastructure and networks facilitate connection of people with similar purposes, knowledge exchange and mutual learning and advocacy of the local manifestation. Vauban is partly connected to the ecovillage movement, and furthermore because of its holistic approach also to eco-agriculture, urban gardening, and other eco-political movements.
Impact Hub Rotterdam (Netherlands)	The Impact Hub Network as an international network of social entrepreneurs was emerging at around the same time that as the Impact Hub in Rotterdam was founded. In its foundation it was guided by the experiences of the first Impact Hub in London. There was an existing informal network of social entrepreneurs in Rotterdam. They got connected via personal contact facilitated by ICT infrastructure, and infrastructure that facilitates traveling of the key people.
Impact Hub Sao Paulo (Brazil)	The starting point of the Impact Hub in Sao Paolo was a strong informal network between them/ their families of higher-middle class people with good ICT access and strong social network. They were all based in different parts of Sao Paolo which on its own is place of connections with very much connecting infrastructure and strong presence of economic and migration flows. The presence of the international network, the strong informal network and the setting of this connected city was an important condition for bringing entrepreneurs together.
The Copenhagen Energy and Environment – KMEK (Denmark)	The KMEK office in Copenhagen mostly uses its infrastructure for communication and advocacy towards local citizens. Additionally it connects people and promotes learning around green energy and technology issues (often using ICT) with an (inter)national 'green'

	network of people for sharpening ideas. The location Copenhagen is also a node in terms of connections to examples of green initiatives (e.g. offshore wind farm).
Participatory Budgeting Amsterdam (Netherlands)	The Participatory Budgeting idea developed in Recife and facilitated by ICT and other type of infrastructure (e.g. knowledge infrastructures) it has been traveling and was adapted and adopted worldwide. Participatory Budgeting took shape in Amsterdam as result of the information and knowledge flows and was eventually made possible via reverse development cooperation project of OXFAM Novib. In Amsterdam it, temporarily, has been developed as an online tool that promotes transparency using ICT as a connecting infrastructure.
Sharing Gijon (Spain)	The ICT infrastructure in the form of digital platforms (Shareable, Ouishare) is important for forming flows of ideas and for facilitating the sharing practice in terms of exchanging goods and services.
The Living Lab initiative Stratumseind 2.0 in Eindhoven (Netherlands)	Eindhoven is a city that is focusing on technological innovation. It has a high quality ICT and knowledge infrastructure for connecting Eindhoven in international knowledge networks (around living labs and smart city). The actors in this social innovation are strongly connected in those networks and they use that for further developing new knowledge (new knowing). Furthermore they also demonstrate their own (local) ideas around monitoring and enhancing safety in the night-life street as best practice.

Table 8: Role of networks and infrastructure
Source: developed by authors

We see that networks, facilitating technologies and ICT play an important role in the formulation of ideas. They do this in the following ways:

I. Connects people around shared purposes
II. Facilitates mutual learning and (knowledge) exchange
III. Facilitates advocacy/ showing best practice
IV. City functions as node/ hub (institutional and social network)

3. What is the degree of translocal ownership of the Social Innovation Initiative?

This question refers the role that translocal connections play in keeping the social innovation initiative alive and in its raison d'être. It refers to who feels responsible for it, and for what reasons and we understood this as ownership and this ownership is labelled

as translocal ownership if it is manifested within certain networks of people or within institutions, rather than with citizens of a neighbourhood.

Social Innovation Initiative	**Degree of trans-local ownership**
Polimi DESIS lab in Milan (Italy)	The DESIS network and the Polimi DESIS Lab, have strong ownership of the ideas produced translocally, i.e., new design theories and practices oriented to support and develop social innovation for sustainability processes shared or co-produced by DESIS network members. New theories are tested, exemplified and confirmed by the Polimi DESIS Lab (as other DESIS Labs) in co-production with locals through innovative projects (new design practices) around local issues and, vice-versa, these practices enable and support new theories that can be build and shared with other DESIS Network members. DESIS Network exists mainly to support the local and trans-local flow of knowledge (between Polimi DESIS Lab and other labs) and to give meaning to this flow (as a new design knowledge that can be labelled as jointly produced by DESIS Network members).
Eco and co-housing district Vauban in Freiburg (Germany)	Interestingly, the trans-local ownership was probably higher than the local ownership in the beginning, because Vauban became internationally acknowledged because of its participatory innovations. The civil society could recruit a large amount of international funding and civil society actors toured through the world to present Vauban as civil society project. The trans-local support because of the model character became a base for the local empowerment aspects towards the city council. It is part of a strong transnational eco-logical movement, but it clearly has local roots as it started as a bottom-up grassroots initiative since the need for housing (felt by a high percentage of educated people - students) in Freiburg was local and this triggered the SI initiative. It is however facilitated by strong connections in ecological movements at trans-local level and the ecology challenge as such it also has strong translocal ownership manifested in various formal and informal networks.
Impact Hub Rotterdam (Netherlands)	The ideology of the international Impact Hub around making positive societal impact through social entrepreneurship has strong trans local ownership, in the formal network, but also in informal networks. The Impact Hub Rotterdam members have a big say regarding its directions, offers and services. The great majority of the members live in the city of Rotterdam and some are also connected through visits or

	personal connections to the broader international Impact Hub network. Members are interested in being connected and the connections that the Impact Hub Rotterdam offers go beyond the neighbourhood level. Not all individual members are however primarily interested in being *internationally* connected. As an organisation, the Impact Hub does serve as a hub that brings people together and that goes beyond the neighbourhood level and as organisation it is also much established in the international Impact Hub network. Altogether, this results in strong translocal ownership.
Impact Hub Sao Paulo (Brazil)	The Impact Hub Sao Paulo members have a big say regarding the directions, offers and services of the Impact Hub Sao Paulo. The members are connected with each other and to their own strong social networks which are manifested in the context of the city of Sao Paolo. The Impact Hub is, as an organisation, also connected to the international Impact Hub network. Altogether, this results in strong translocal ownership.
The Copenhagen Energy and Environment – KMEK (Denmark)	The KMEK office in Copenhagen has a strong ownership of its initiators who are active and strongly connected translocally and hence it has strong trans-local ownership. Some connections are organized directly by KMEK and not via the transnational organisation INFORSE. There are, however, much interaction between INFORSE and KMEK.
Participatory Budgeting Amsterdam (Netherlands)	The general *idea* of Participatory budgeting has strong translocal ownership and is advocated by the international OIDP network and the local initiative. The initiative however is not strongly connected to the formal network of the OIDP.
Sharing Gijon (Spain)	There is a strong ownership of the sharing economy concept at trans-local level, which is manifested in the international Shareable network and beyond to which sharing Gijon is linked. The political commitment to sharing of Podemos Xixon (Gijon) was a form of trans-local ownership at the city level.
The Living Lab initiative Stratumseind 2.0 in Eindhoven (Netherlands)	In Eindhoven there is strong trans-local ownership of smart city and living concept internationally and at the city level. The neighbourhood based living lab Stratumseind 2.0 is known but not particularly owned internationally, however it is strongly owned at city level.

Table 9: Degree of trans-local ownership

Source: developed by authors

The ownership at trans-local level of the social innovation initiatives that we studied varies and hence we identified 3 degrees to describe this:

I. Strong translocal ownership where translocally connected people initiate an innovation and / or where they promote it further and make it sustain translocally
II. Intermediate translocal ownership where translocally connected people play some role in creating and sustaining the innovation translocally, but the role is not very strong
III. Weak translocal ownership where translocally connected people play a very limited or no role in creating and sustaining the innovation translocally

4. In what kind of translocal activities and interactions has this social innovation resulted?

Social innovation initiatives respond to (translocal) challenges or opportunities and by doing so they generate and promote interactions and they employ various translocal activities.

Social Innovation Initiative	**Trans-local activities and interactions**
Polimi DESIS lab in Milan (Italy)	The social innovation is co-produced by local citizens and translocally operating professionals and it materializes locally in projects in the city that show a local manifestation of the DESIS approach. At trans-local level it also provides a knowledge base for the DESIS Lab based at Politecnico di Milano and it feeds the DESIS network with knowledge and experience and sharpens its ideas. Local projects are intended to be inspirational for city development at large in Milan.
Eco and co-housing district Vauban in Freiburg (Germany)	The housing initiative in Freiburg was a best practice model that had its influence trans-locally since especially the civil society actors presented Vauban as participatory model on many conferences. Majors of cities in France, Japan and other countries have learnt and applied aspects from Vauban in their city planning processes (see Picabea/ Kunze et al. 2016). It also shook up the urban planning approach in Freiburg, so at city level and by that it created strong interactions with city authorities. To some extent, it also inspired the urban development process in Freiburg even if the model has not been replicated as a whole – the participation and the car-reduced aspect are relatively unique.
Impact Hub Rotterdam (Netherlands)	The Impact Hub Rotterdam is strongly connected to other Impact Hubs, as it is a member of the international network. It also has been one of

	the first Impact Hubs and has driven the foundation of the international network. This results in constant interactions and networking activities. Interestingly, not all its members are interested in the international dimension of the Impact Hub network.
Impact Hub Sao Paulo (Brazil)	The Impact Hub Sao Paulo members actively do networking within Sao Paolo and with the Impact Hub international network and beyond. Also the Impact Hub Sao Paolo is a local manifestation of the international Impact Hub network.
The Copenhagen Energy and Environment – KMEK (Denmark)	The KMEK office connects people and facilitates networking at trans-local level. It then sends the trans-locally formulated message out locally, using a mix of ICT-based solutions and concrete events. KMEK is also involved in developing 'real interventions'; however, mostly at a trans-local scale: for example it developed Middelgrunden Windfarm was part of the change of Copenhagen's energy supply.
Participatory Budgeting Amsterdam (Netherlands)	Participatory Budgeting is an approach that is strongly rooted in the trans-local level which as a concept travels the world. Via an international exchange program, initiated in an informal network, it manifested locally in Amsterdam (so initially it was not connected to and developed as local manifestation by IODP). In the context where participatory budgeting emerged it was initiated to fight corruption. In travelling the world the concept of participatory budgeting is adapted to the local context to become applicable and relevant.
Sharing Gijon (Spain)	At a trans-local level, Sharing Gijon relates to other secondary cities in Spain through which sharing as resilience strategy in those cities outside the international investment flows is promoted. Additionally, through one of the original organizers of Sharing Gijon, it networks internationally to improve its knowledge base. It was labelled as 'sharing initiative' following interactions with the international Sharing network.
The Living Lab initiative Stratumseind 2.0 in Eindhoven (Netherlands)	The living lab initiative Stratumseind 2.0 is considered a best practice at city level, nationally and even internationally. This strengthens the city in its believe in the approach: the living lab and the smart city become more prominent jargon in the field of urban planning and development in Eindhoven, in the Netherlands and beyond. This is an example of new framing. The lab is visited by international delegations and the lab is asked to present findings both nationally and internationally at smart city and living lab events. Such translocal connections make this local lab in Eindhoven an inspiration for others,

	but also the initiative itself generates new insights (new knowings) based on its trans-local connections.

Table 10 Trans-local activities and interactions

Source: developed by authors

The social innovation initiatives all resulted in various types of trans-local interactions and activities, in all cases there were activities in which various people connected and formed networks that went beyond the local level. Additionally there were concepts, ideas and approaches that were identified and defined translocally but that were eventually locally manifested in the social innovation under study. While other social innovations offered local best practices that were spread again translocally. In conclusion we identified the following interactions and activities:

I. Networking activities
II. Locally manifesting an (in)formal trans-local network
III. Showcasing a local best practice trans-locally (incl. at national and city level)

4.2.1 Translocal connections in the emergence of SI summarized

The table classifies and summarizes the findings of all the case studies in one overview. It shows that translocal connectedness is very important for explaining the emergence of all case studies. Connecting people, mutual learning and exchange and networking activities are relevant for all SI-initiatives under study. This is not surprising given the fact that translocal connections have become part of our daily lives and even more, we have selected cases that are members of transnational networks.

The table furthermore shows that in some cases the city plays an important role as a node or a hub, but not in all, even if we selected all cases that we could identify as 'urban' SI-initiatives. Moreover 4 out of the 8 initiatives that we studied have strong translocal ownership which means that the SI-initaitve is primarily created and sustained by people who are not 'the locals' in the neighbourhood in which the initiative is located. Furthermore each initiative that we studied has at least some degree of translocal ownership which means that in all initiatives people play at least some role in creating and sustaining the innovation translocally, even if the role is not always very strong.

transformative **s**ocial **i**nnovation **t**heory

Categories and subcategories **SI Initiative**	**Translocal challenge/ opportunity to which SI responds** **1. Economy** **2. Ecology** **3. Technology** **4. Democratic participation** **5. Collaborative Action** **6. Social Entrepreneurial interests**						**Role of infrastructure and flows in forming ideas** **1. Connects people around shared purposes** **2. Facilitates mutual learning and knowledge exchange** **3. Facilitates advocacy/ showing best practice** **4. City functions as node/ hub (institutional and social network)**				**Degree of trans-local ownership of SI initiative From:** **1 (strong) to 3 (weak) (shades of grey)**	**Translocal activities and interactions** **1. Networking activities** **2. Locally manifesting an (in)formal trans-local network** **3. Showcasing a local best practice translocallly (incl. at national and city level)**		
	1	2	3	4	5	6	1	2	3	4	Degree 1 to 3	1	2	3
The Polimi DESIS lab in Milan, Italy		X	X		X		X	X	X		1	X	X	X
Eco and co-housing district Vauban in Freiburg, Germany		X	X	X			X	X	X	X	2	X		X
Impact Hub Rotterdam, the Netherlands	X				X	X	X	X			1	X	X	
Impact Hub Sao Paulo, Brazil	X					X	X			X	1	X	X	
The Copenhagen Energy and Environment office (KMEK), Denmark		X	X		X		X	X	X	X	1	X		X
Participatory Budgeting Amsterdam, the Netherlands				X	X		X	X			2	X	X	
Sharing Gijon, Spain	X			X	X		X	X	(X)*		2	X	X	
Living Labs Stratumseind2.0 in Eindhoven, the Netherlands			X		X		X	X	X	X	2	X		X

Table 11: Summarizing how translocal connectedness explains the emergence of various social innovation initiatives

Source: developed by authors - *In the case we use (X) this category only partly applies

4.3 The interactions between local rootedness and translocal connections

This section addresses how the interactions between local rootedness and translocal connections explain the emergence of social innovation initiatives. We will look at how the interactions produced the emergence process and what kind of interactions were important. Did the SI-initiative emerge because people mobilized around a local issues managed to tap into translocal networks?; or did people define challenges that were initially not tied to a certain locality or neighbourhood, but rather translocal and perhaps more abstract and did they then made them 'land' somewhere? Answering those questions will help us to identify different interaction patterns in that can explain variations in the emergence process of SI-initiatives. It is best answered by looking at the following questions:

- Did the SI-initiative emerge because it addressed local issues, at least initially (as we defined it, this means the neighbourhood)? If not, what kind of issues did it address initially, what made it urgent and was the trigger to materialize in space somewhere?
- What is the dominant direction of the various interactions that took place in the emergence process of the SI-initiative? Did it start with local rootedness and then develop further by the means of its translocal connections, or did the travel go the other way around?
- How is ownership primarily manifested in each SI-initiative; do the 'locals' own the initiative and is this this initiative primarily locally rooted, or is mostly translocally connected and owned?

1. Did the social innovation initiative initially (in its emergence) address local, neighbourhood issues?

Social Innovation Initiative	**Addressing local, neighbourhood issues**
Polimi DESIS lab in Milan (Italy)	The initial opportunity that the Polimi Desis Lab responded to is the idea of designing collaborative services, as developed at the University and DESIS Network, so trans-locally. But those ideas only get meaning if they are contextualized and they are inherently always (at least) partly inspired by various local challenges in various neighbourhoods. Based on those local challenges POLIMI designs intervention in co-production with locals.
Eco and co-housing district Vauban in Freiburg (Germany)	The eco and co-housing district Vauban in Freiburg in Germany was triggered by a concrete local challenge in terms of housing needs that were experienced at the level of a neighbourhood. At the same time,

	ecological and communal living in the neighbourhood had become a main value for planning the district. Residential ownership could be realised through co-operative ownership frames and self-organised building groups.
Impact Hub Rotterdam (Netherlands)	The Impact Hub Rotterdam did initially not address local neighbourhood issues, but it responded to a more abstract idea of social entrepreneurship and a concrete tangible challenge that is the need for working space that was experienced at city level.
Impact Hub Sao Paulo (Brazil)	The Impact Hub Sao Paulo was created around values, and it managed to 'land' in a specific location in Sao Paulo because there was a person connected to São Paulo and it seemed to fit there. It responded to a need for flexible working space of SP's social entrepreneurs that was experienced at city level, but this need was not related to challenges in (a) neighbourhood(s) in Sao Paulo.
The Copenhagen Energy and Environment – KMEK (Denmark)	KMEK in Copenhagen was one of the several local manifestations that 'landed' in a specific place because it seemed a strategic location, and not because it addressed challenges in the specific neighbourhood in which the office is located. It did however address a need for being more localised and present in the city of Copenhagen.
Participatory Budgeting Amsterdam (Netherlands)	Participatory Budgeting in Amsterdam was addressing a neighbourhood issue as it responded to an opportunity of a strong community that was interested in investing in their own neighbourhood which was in a process of becoming more prosperous but which also had some serious liveability issues.
Sharing Gijon (Spain)	By promoting sharing as alternative to the current economy, Sharing Gijon addressed issues that were clearly present in several neighbourhoods of the city in Gijon.
The Living Lab initiative Stratumseind 2.0 in Eindhoven (Netherlands)	The local challenges in Stratumseind 2.0 – Stratumseind is a street with a relatively high risk for violent conflict- triggered the emergence of this social innovation. It could develop because it tapped into opportunities at city level: Eindhoven as smart city, with a strong and innovative private sector, and a strong technical university. Both the city and the University have strong national and international connections, going beyond the local.

Table 12: Overview showing whether SI-initiatives initially addressed local, neighbourhood issues
Source: developed by authors

Based on the empirical findings we identified the following categories that explain how, if at all, SI-initiatives addressed neighbourhood issues:

I. Yes one specific neighbourhood
II. Yes of several neighbourhoods
III. No, but did address issues at city level
IV. No

2. What is the dominant direction of the interactions that took place in the emergence process of the SI-iniative between its local roots and its translocal connections?

Social innovations are often associated with bottom-up initiatives or sometimes with bottom-linked initiatives. Such conceptualizations suggest a direction of interactions between different levels for example going from the bottom (local) upwards (trans-local). We have assessed for our case studies what kind of patterns we saw and what the dominant directions of the interactions were.

Social Innovation Initiative	**Dominant direction of interactions in emergence process**
Polimi DESIS lab in Milan (Italy)	In the DESIS Polimi Lab there are intense interactions between the trans-local and the local that go in all directions. In some cases the DESIS method 'lands' locally and initiatives are further co-produced there; also local challenges trigger new co-productions. The lab promotes 'locals' to take ownership over their territory (the neighbourhood) and the academics adjust their ideas and concept's based on what they learn from practical experience in the neighbourhoods.
Eco and co-housing district Vauban in Freiburg (Germany)	The residents of Vauban took the lead in developing their own neighbourhood, creating ecological standards, collective ownership and cooperative housing. Through their trans-local, international linking they could recruit resources of knowledge and money which could flow into their local ownership to increase their knowledge, credibility and opportunities.
Impact Hub Rotterdam (Netherlands)	The Impact Hub Rotterdam is characterized by interactions between the trans-local (through city, national and international networks) and the local level. The interaction with the local level intensified since they moved to a different neighbourhood they are very strongly connected to the local level and they also engage with local residents. They organize activities in the neighbourhood in order to address some local challenges.

Impact Hub Sao Paulo (Brazil)	There is intense trans-local interaction between people that are connected to the Impact Hub Sao Paulo as a 'city-initiative'. The members have city based, national and international relationships that all take place at the trans-local level.
The Copenhagen Energy and Environment – KMEK (Denmark)	The KMEK office has strong interactions within the trans-local level and it promoted local ownership of global environmental challenges through a local office, this proved to be hard. It however did manage to realize interactions with citizen's (residents in Copenhagen), but mostly by flows, using ICT-based communication.
Participatory Budgeting Amsterdam (Netherlands)	Participatory budgeting has various types of interactions: there are interactions in the neighbourhood within the application of Participatory Budgeting and also between the neighbourhood and the city. Additionally there was a strong influence from the trans-local level towards the local level since the concept of Participatory Budgeting travelled via reversed development cooperation as it came originally from Porto Alegre in Brazil. After participatory budgeting was practiced in Amsterdam, the centre for budget monitoring and citizen participation (CBB) also collaborated with other cities in the Netherlands.
Sharing Gijon (Spain)	Sharing Gijon enables several interactions within neighbourhoods, but also between neighbourhoods, between people and with the global network of Shareable. Through Shareable it is also potentially related to other (informal) networks for promoting an alternative economy.
The Living Lab initiative Stratumseind 2.0 in Eindhoven (Netherlands)	The interactions between the local and trans-local level are crucial for Stratumseind 2.0: they really shape the initiative and they are part of the new organising and knowing that lies at the heart of this SI. Eindhoven has strategic position within the global knowledge network and it needs this for developing this initiative further, while Stratumseind 2.0 exemplifies Eindhoven's front running position and inspires others at transnational level. It is however clear that the local interest is steering this process of interactions.

Table 13: Overview of the directions of interactions (local roots, translocal connections) of SI-initiatives
Source: developed by authors

Based on our empirical observations we have identified the following directions, or directional patterns of interaction:

I. Within the local roots
II. From the local roots to the translocal connections (and back)
III. Multi-directional interactions

IV. From the translocal connections to the local roots (and back)
V. Within the translocal connections

3. What can be considered as the dominant level of ownership of the social innovation initiative?

Social Innovation Initiative	**Dominant level of ownership**
Polimi DESIS lab in Milan (Italy)	It is very hard to identify a dominant level of ownership in the Polimi DESIS Lab in Milan. The Polimi Lab itself and of the idea of 'the design approach' is most strongly owned trans-locally, while the ownership of actual interventions of the lab is rather equally spread between the local and trans-local level.
Eco and co-housing district Vauban in Freiburg (Germany)	Vauban is primarily cooperatively 'owned' ideally by the local residents who made it and live in it and as a consequence local ownership is dominant. Nevertheless, civil society actors and helped to make Vauban a special show case model with international attention and (financial) support and it is also promoted by the City of Freiburg. Hence, local ownership is dominant, but translocal ownership is also strong.
Impact Hub Rotterdam (Netherlands)	The initiative is owned by Rotterdam Impact Hub members which are people based in the city of Rotterdam (translocal) and people who are also most strongly connected translocally, even if it is also (rather strongly) locally rooted.
Impact Hub Sao Paulo (Brazil)	The Impact Hub in Sao Paulo is not locally contextualized. It is owned by people who are based in Sao Paolo (at city level) that are characterised by their strong connections to and concerns at trans-local level.
The Copenhagen Energy and Environment – KMEK (Denmark)	The ownership of KMEK is dominantly trans-local. However, the office does make connections to local citizens and it provides localized and physical space to see, hear and touch the actual 'green' solutions.
Participatory Budgeting Amsterdam (Netherlands)	The ownership of Participatory budgeting Amsterdam is mainly local as only inhabitants of the neighbourhood and the local government (district civil servants and elected district board) participate in the initiative. There is little trans-local ownership at the city level as the only involvement at city level regards providing data as input for the initiative. Within the transnational networks around Participatory Budgeting the Amsterdam case is not particularly prominent.

Sharing Gijon (Spain)	The ownership of Sharing Gijon is most prominent at city level and not so much driven from one specific neighbourhood. The ownership is however mostly linked to a number of key persons with strong trans-local networks. So it is not so strongly shared by larger local or trans-local community.
The Living Lab initiative Stratumseind 2.0 in Eindhoven (Netherlands)	Stratumseind 2.0 has strong local ownership. Even if it is also owned at city level, and it is meaningful transnationally, it is not 'owned' as such at those levels.

Table 14: Overview of dominant level of ownership

Source: developed by authors

We have understood strong local ownership as a form of ownership where local citizens typically initiate an innovation and / or where the local citizens promote it further and make it sustain. Where as in strong trans-local ownership the people typically initiate an innovation and / or where they promote it further and sustain it translocally. We have identified the following categories of ownership:

I. Local ownership is dominant
II. Translocal ownership is dominant
III. Translocal and local ownership almost equally strong

4.3.1 Interactions between local roots and translocal connections in the emergence of SI summarized

The table classifies and summarizes the findings of all the case studies in one overview. It shows that translocal connectedness is very important for explaining the emergence of all case studies. Connecting people, mutual learning and exchange and networking activities are relevant for all SI-initiatives under study. This is not surprising given the fact that translocal connections have become part of our daily lives and even more, we have selected cases that are members of transnational networks.

The summary and overview table shows that not all SI-initiatives were triggered by local neighbourhood issues, however, the city did play an important role in the emergence of all the cases that we studied. There always was a critical mass of actors within one city that made the social innovation land somewhere in that city. This is not surprising since we studied 'urban' SI-initiatives. The overview table also shows that there is variation in the interaction patterns and emergence 'journeys' : 1) some SI-initiatives were triggered because there were strong local roots such as the Vauban eco-housing district and Stratumseind 2.0, 2) while others were triggered by interactions between people that happened through and within translocal connections in networks, they formed ideas, addressed needs and then developed initiatives that landed locally in a certain

neighbourhood that fitted some criteria of the initiators, this was the case for KMEK and the Impact Hubs, 3) while there were also SI-initiatives that emerged as the consequence of the coming together of issues that were locally rooted and ideas that were formulated within the connections or, in Castellian terms in the 'space of flows', examples of those are the participatory budgeting initiative in Amsterdam and also Sharing Gijon as well as the Polimi Desis lab in Milan.

Categories and subcategories **SI Initiative**	**Did SI initially address neighbourhood challenges?** **1. Yes of one specific neighbourhood** **2. Yes of several neighbourhoods** **3. No, but did address issues at city level** **4. No**				**Dominant direction of interactions in emergence process** **1. Within the local roots** **2. From the local roots to the translocal connections (and back)** **3. Multi-directional interactions** **4. From the translocal connections to the local roots (and back)** **5. Within the translocal connections**					**Dominant type of ownership:** **1. Local ownership dominant** **2. Translocal ownership dominant** **3. Translocal and local ownership almost equally strong**		
	1	2	3	4	1	2	3	4	5	1	2	3
The Polimi DESIS lab in Milan, Italy		X					X					X
Eco and co-housing district Vauban in Freiburg, Germany	X	X				X				X		
Impact Hub Rotterdam, the Netherlands			X					X			X	
Impact Hub Sao Paulo, Brazil			X						X		X	
The Copenhagen Energy and Environment office (KMEK), Denmark			X					X			X	
Participatory Budgeting Amsterdam, the Netherlands	X						X			X		
Sharing Gijon, Spain		X					X					X
Living Labs Stratumseind2.0 in Eindhoven, the Netherlands	X					X				X		

Table 15: summary table of interaction patterns between local roots and translocal connections

Source: developed by authors

5 Synthesis and conclusion: towards three spatial emergence patterns of social innovation initiatives

5.1 Synthesizing the perspectives

In this final section we answer our main question - How can we understand the role of local rootedness and translocal connections in the emergence of social innovation-initiatives?- based on the presented case studies. This then results in the identification of three different spatial emergence patterns of social innovation initiatives.

Social innovation initiatives often actively respond to challenges that are experienced at the neighbourhood (local) level, examples that are very obvious are Stratumseind 2.0 living lab initiative and eco and co-housing initiative Vauban. However, in our sample we also saw that some do not necessarily address neighbourhood issues, but rather issues that are experienced at city level as is the case for the Impact Hub initiatives and KMEK. Even if a social innovation initiative addresses issues at city level, it (obviously) materializes in space at the neighbourhood level in one way or another. This does not mean however that is always connected to this neighbourhood. Likewise, not all social innovation initiatives have (equally) strong local ownership. In the case of the Impact Hub Sao Paulo there seems to be not connection with local citizens at all, it just 'landed' in a place where there was space available. However, we can conclude that not all SI initiatives emerge with strong local roots.

The translocal connections are important in all our case studies. The SI-initiatives always link their innovation to an idea that is bigger than a local issue; it is then formulated at a level of abstraction that makes it relevant and applied beyond the neighbourhood and those are often related to a dimension of sustainability (economy, ecology, social) and to new and innovative approaches for governance, co-creation and technology. Ideas have managed to reach the locally rooted social innovations by the use of infrastructure and (social) networks. ICT plays an important role in this process. In some cases, for example in Freiburg, the city functions as a hub and provides institutional infrastructure that facilitates the growth of the social innovation initiative. This can provide linkage to important and strategic networks via the city, but it can also be the other way around as it happened in Freiburg where the city provided support after the initiative linked itself to important and strategic trans-local networks. In others the city is more important for making it land locally, for example in the case of Participatory Budgeting in Amsterdam. This social innovation initiative is locally manifesting an idea that originally emerged elsewhere and it gets much support from the local government. But in the case of Vauban in Freiburg the city is not only doing this, it is there also a platform that showcases the Vauban example as a best practice internationally.

In all the cases that we studied the interactions between local roots and translocal connections were very important, but for some they were particularly critical for the emergence. For example, Sharing Gijon emerged because there were locally felt issues of

budget cuts for public goods resulting in limited levels of service provision to residents. Those were to some extent addressed at the local level, but they were only turned into a 'Sharing Gijon' initiative when the idea of 'sharing' that was locally adopted from a translocal network. The impact Hub Sao Paulo only had interactions at city level and beyond and we therefore labelled this as having only translocal interactions. While in the Polimi DESIS lab in Milan there were many interactions in the direction local to translocal and translocal to local. In concrete the lab developed neighbourhood based initiatives; in some initiatives the ideas clearly came from the trans-local level (e.g. the University or the DESIS international network) and then got applied and adapted in the local context, while in other initiatives a local need was leading and this got then confronted with translocally developed knowledge.

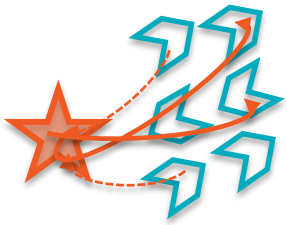
5.2 Towards three spatial emergence patterns

Based on the synthesis of our analysis we have developed a conceptual framing of a typology of three different patterns that explains the role of space with dimensions of local rootedness and translocal interactions in the emergence of social innovation initiatives:

1. Locally produced, trans-locally embedded
2. Produced in balanced interaction between the local and trans-local
3. Trans-locally produced, locally embedded

The typology acknowledges that *each social innovation initiative is produced as a result of interactions between its local roots and its translocal connections*. However, they are typically different in what has triggered their (initial) production; how ownership is manifested and also in terms of the direction of the interactions between the local roots and the translocal connections. The typology actually presents archetypes so in reality you will see that a social innovation initiatives has elements of various archetypes, however, one of the archetypes will typically describe a certain innovation in the best way. We describe each archetype with one to two examples that come fairly close to the stylized archetypes.

Locally produced, trans-locally embedded

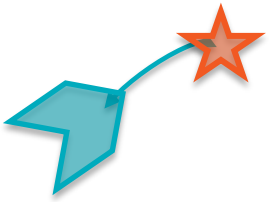


The Stratumseind 2.0 living lab emerged in a street, and it addressed an issue that was experienced in that street, which was an increased risk for night-life related violence. This challenge was experienced by local residents and bar-owners and by the local government and police, among others. They together established the living lab initiative and they also linked to the University and other private and (semi) public sector actors. In this process they collaborated in a new form, they generated new knowledge together and they used data and technology to improve the social and physical situation in the street. So starting

from the local they embedded their innovation also beyond the local by creating translocal connections. The initiative is showcased at city level, nationally and internationally and form this exposure the actors involved also get inspiration from other initiatives and this influences the local activities again. For example, at some point a researcher entered and started to do experiments with the design of terraces, a new focus of the lab. The local rootedness makes this innovation highly relevant to its direct context, while the connectedness allows for constant reinvention and adaptation to changing (local) circumstances.

Vauban emerged locally from a lively, vibrant and highly knowledgeable local civil society when a central space in the city became available. Forum Vauban was initially a civil society initiative on city level targeting at the district level. The base was at the University of Freiburg and a network of several initiatives in the cities during years of planning, recruiting professional support, finances and for convincing the city council. The support was recruited in form of national and international awards as model project for participatory and ecological planning. This trans-local attention gave a strong importance and professional character to the local network of initiatives at city level, so that the city council cooperated with them. When Vauban as a participatory, ecological district became more concrete, people started to form neighbourhood groups and co-housing projects. After Vauban was built the participatory engagement by the actors at the city level decreased strongly. Actors are rather focussed on the local community now or on different kind of trans-local engagement.

Produced in balanced interaction between the local and trans-local



Sharing Gijon exemplifies the typology of a social innovation initiative that emerged somewhere between its local roots and translocal connections. There were municipal budget cuts and this was felt in neighbourhoods in Gijon. On the other hand, local communities were strong, they had strong social ties and many small scale local meetings places played strong role in this. Local residents and professionals in Gijon were eager to answer to this challenge and built on the strength of the community by promoting the idea of the sharing economy. But it was only until they met others who were organized in the international network of Shareable that the conceptual and organisational means were available to start off establishing 'Sharing Gijon'. The initiative then further developed under influence of interactions within and between neighboorhoods (within the city) and within the virtual network. Even if this social innovation initiative is locally rooted, it is also very fragile as it also strongly depends on the connection between the local and trans-local that is materialized in a few people only.

Trans-locally produced, locally embedded

The Impact Hub in Sao Paolo emerged because a social entrepreneur from Sao Paulo was connected to the international Impact Hub network. He also had a network in the city of Sao Paulo and he knew there was demand for a new type of working space. The Impact Hub had developed a concept that seemed interesting to be implemented in Sao Paulo. The linking pin then looked for suitable space and eventually the initiative landed in a specific neighbourhood, an industrial site. It was initiated to address a need that was felt at the wider city level and this need had no direct connections to the neighbourhood in which it is based.

Typologies	**Triggering issues characterized**	**Spatial dimension**	**Ownership of initiative**	**Directions of interactions between local and trans-local**
Locally produced, trans-locally embedded	Locally rooted issues, in neighbourhoods	The social innovation addresses a local issue with spatial dimensions and materializes in a local spatial manifestation	Strong local ownerships, (strong) translocal ownership is possible but not necessary	Interactions within the neighbourhood or from the local roots to the translocality
Produced in balanced interaction between the local and trans-local	Combination of locally rooted, neighbourhood issues and translocally defined ideas	Ideas transmitted via connecting infrastructure and a spatially defined local issue collide	Local and trans-local ownership are equally strong	Multi-directional interactions
Trans-locally produced, locally embedded	Translocally defined ideas, materializing at city-wide level	Connecting infrastructure brings ideas together and generates a virtual	Strong translocal ownership, (strong) local ownership is	From translocal connections to local roots or within the translocality

		space breeding ground	possible but not necessary	

Table 16: Overview of characteristics of typologies of spatial emergence patterns

Source: developed by authors

In the table below we classify our case studies in our typology of 3 archetypes, recognizing that all social innovation initiatives have elements of more than one archetype.

SI Initiative	**Locally produced, trans-locally embedded**	**Produced in balanced interaction between the local and trans-local**	**Trans-locally produced, locally embedded**
The Polimi DESIS lab in Milan, Italy			
Eco and co-housing district Vauban in Freiburg, Germany			
Impact Hub Rotterdam, the Netherlands			
Impact Hub Sao Paulo, Brazil			
The Copenhagen Energy and Environment office (KMEK) in Denmark			
Participatory Budgeting Amsterdam, the Netherlands			
Sharing Gijon in Spain			
Living Labs Stratumseind2.0 in Eindhoven, the Netherlands			

Table 17: Overview of cases classified within typology

Source: developed by authors

5.3 Conclusions and discussion

5.3.1 Social innovations can start everywhere

Social innovation initiatives emerge in a process in which multi-directional spatial interactions play a critical role. It is important for social innovations that there is breeding ground locally and that there is breathing space translocally. In our study we have systematically shown that the relative importance of local rootedness and translocal connectedness, as well as the directions and nature of the interactions between those vary across different SI-initiatives. Some initiatives start at the bottom and then become linked this could be called bottom-linked initiatives, following Moulaert et al. (2013). In this paper we labelled it as the 'locally produced, translocally embedded social innovation initiative'. But, there also are SI-initiatives a socially innovative idea is produced translocally, or differently put it emerged in the Castellian 'spaces of flows', and it then typically refers to more abstractly defined needs. Such an idea then lands somewhere locally and it can also become locally contextualized if there is enough breeding space for it locally. This archetype is labelled as 'translocally produced, locally embedded social innovation initiative'. Finally there are initiatives that emerge somehow simultaneously; a local issue is already identified somewhere locally, however, it is not being addressed in that local level. It is only addressed when it is confronted with a certain approach or idea that is articulated already at trans-local level. We say that this archetype is 'produced in balanced interaction between the local and translocal'. In this paper we have not emphasized on the success of SI-initiatives, but based on our conclusions here, and the work of (Haxeltine et al. 2017) we can expect that SI-initiatives, despite where they start off, always need to be locally rooted and translocally connected and both the local rootedness and the translocal connections can be empowering (ibid) and supporting for nourishing innovative, new ways of knowing, framing, organising and doing.

5.3.2 The translocality of space for social innovation

As becomes clear throughout this paper space plays a critical role in the emergence of SI-initiatives. It plays in important role in its meaning of a local place (or as Castells would say 'space of places') and as a space of translocal connections (or 'space of flows'). All the SI-initiatives that we analysed in this paper used and/ or created and/ or invested in local public places and places for communities to live or to work. Additionally they all used, created and invested in translocal connections within space. This resulted in spatial interaction patterns that enhanced changing social relations and the emergence of new ways of doing, organizing, framing and knowing.[7]

It is tempting to ask which scale level is most important for social innovation. We have not tried to answer this question and we think it is eventually not that relevant. What matters most is that social innovations typically act at various scale levels at a time without being

[7] N.B. In the TRANSIT project we defined social innovation as changing social relations and new ways of doing, organizing, framing and knowing (see e.g. Haxeltine et al, 2017).

much concerned about those. This is why we embrace the idea of translocality. It allow us to see the relevance of locality and of anything that is beyond it without pinning down scale levels a priori. Streets, blocks, wards, neighbourhoods, districts, cities, metropolitan regions, all kind of other regions, nations, groups of neighbourhoods or cities, or countries, but also institutions and virtual platforms and communities all have spatial dimensions (N.B. space is more than an area that can be drawn on a map) and those are important in the emergence (and sustaining) of social innovation. This resonates with the recent work (outside urban sociology) that takes the conceptualization of space a step further with the notion of concepts such as the Internet of Things that is used among others to frame the Smart City (see e.g. Schaffers et al, 2011; Gubbi et al., 2013; Zanella et al., 2014). In this conceptualization, the role of ICT infrastructure and ICT based applications is key, it adds another layer to our understanding of space. It is considered that, if used rightly, it can play an important role in enhancing digital and physical connectedness, in democratizing decision-making and in establishing various decentralized networks.
As we mentioned in the introduction of this paper, we aimed to use the conceptualization of space from urban studies to inform other fields, mainly transition studies. We can conclude based on this paper among others that space plays a critical role in change processes that does deserves explicit attention. It should however be approached with some conceptual openness: space is important at all kind of scale levels that cannot be pre-defined and spatial interactions are multi-directional. This is in line with Coenen, Benneworth and Truffer (2012) who say that "However, this must equally not be reduced to attempting to find "the" appropriate geographical scale on which a TIS (*Technological Innovation System*[8]) is "actually" located. (Coenen, Benneworth, Truffer, 2012, p.971)". More specifically, we contend that transition research would do well to take a closer look at the global networks and local nodes of transition processes in conceptual, methodological and policy terms. Conceptually this means that transition analyses, whether through the lens of technological innovation systems or the multi-level perspective, should start to explore, and partly revisit, the meaning played by particular places in the evolution of transitions.

Finally, answering questions, results in new questions such as: How can the different archetypal social innovation emergence patterns be further characterized? What is the role of local and translocal dimensions of culture, power distribution, access to resources and institutions? How does the spatial dimension relate to transformation, which is about challenging, altering and replacing existing formal and informal institutions? And moreover, how can such a characterization and inform social innovation practice?

[8] Explanation of TIS included by authors of this paper

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