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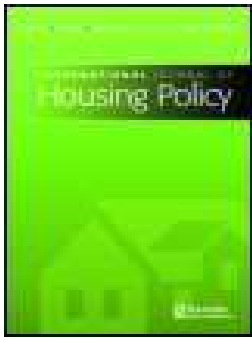
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## A methodological quest for systematic literature mapping

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### ABSTRACT

This article develops an approach to systematic literature mapping that can contribute to advancing housing knowledge and theory in three ways. At a basic level, it informs more systematic, balanced and transparent literature reviews than currently performed in housing studies. As a self-contained project, it unravels research gaps, highlights where rich evidence already exists, and indicates changing conceptual approaches. Lastly, as an opening stage to evidence reviews, it informs the review's questions, directions and dimensions. Our approach to literature mapping systematically identifies and explores a comprehensive but non-exhaustive literature related to a broad academic or policy theme. We have adapted established methodological approaches from systematic reviews to our much broader aims and shorter timeframe. By reflecting on five projects, we detail the methodological process so that it could be replicated or adapted in future studies. Besides reflecting on the systematic and less biased retrieval of relevant literature – pertinent to any academic project – we present insights into synthesising its temporal, geographical, conceptual and thematic trends. We also reflect on some inevitable methodological challenges faced in this process of translation of aims into the narration of findings, which have a wider currency across the social sciences.

**KEYWORDS** Housing; literature review; mapping review; systematic map; methodology

### Introduction

The 'information society' has powerfully influenced social structures and our ways of being for quite some time (Castells, 2009). Public discourses tend to acknowledge the 'power of information' (e.g., Mayo & Steinberg, 2007) but less so the challenge of interpretation and overload (early observed by Bourdieu, 1979). Alongside these grand challenges, this article

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focuses on finding quick but systematic ways of making sense of the ever-increasing scholarship – which universities and other research-based institutions are under financial pressure to produce – with a view of linking findings to a renewed appetite for evidence-based approaches to policy (Cabinet Office, 2013; Mackie, Johnsen, & Wood, 2017). We call this endeavour ‘systematic literature mapping’ where ‘literature’ stands for a body of writing related to an academic or policy theme. Drawing on five studies we have undertaken related to ‘policy transfer’, ‘housing taxation’, ‘place-making’, ‘housing supply’ and ‘housing aspirations’ (Preece, 2018; Serin, 2018a, 2018b; Soaita, 2018a, 2018b), this article aims to explain our understanding of what systematic literature mapping is and is not, the different ways in which it can be performed, and what kind of findings it may unearth. These five projects were prioritised through team discussions across over 40 academics, members of the UK Collaborative Centre for Housing Evidence (CaCHE). CaCHE’s research agenda, its desire to inform ‘what-works’ policy approaches, and its unavoidably constrained resources have determined our methodological quest for rapid but robust literature mapping, well-tailored to the broader research questions we have explored. The thematic diversity of these projects benefited our quest, stirring critical reflection on the merits and challenges of systematic literature mapping.

The relevance of this article is twofold. First, methodological papers within housing studies are relatively rare (Hoolachan, 2016; Ronald, 2011), particularly those aiming to map an exponentially growing scholarship. To exemplify, a Google Scholar search for publications containing the word ‘housing’ in the title returned about one thousand hits for 1997; three thousand for 2007 and nine thousand for 2017.<sup>1</sup> This article shows one way of making sense of the growing literature within the frame of a housing topic; it is also a critical opening step in assessing existing evidence to inform policy-making, professional practice and scholarly debates.

Second, our article adapts insights from systematic reviewing to a less resource-intensive approach in order to help understand existing knowledge. While approaches to systematic reviewing are growing in number, disciplinary coverage and theoretical sophistication (Barnett-Page & Thomas, 2009), they have rarely breached the housing scholarship beyond health studies, not least for a lack of means of matching their resource-intensive nature (Wallace et al., 2006). Moreover, the reporting of mapping the literature in systematic reviews is conspicuous by its absence. We wish to contribute to filling this methodological gap. While systematic literature mapping could be used trivially to inform traditional literature reviews, we argue that its great value rests on its distinctive analytical capacity to open new research questions, document research gaps and the changing

understanding of a phenomenon in relation to different epistemological assumptions.

However, we should acknowledge from the start what a systematic literature mapping is and is not. First, our approach to make *rapid* sense of a vast scholarship will be necessarily thin in comparison with established traditions of systematic reviews (Gough, 2013; Sandelowski, Voils, Leeman, & Crandell, 2012; Voils, Sandelowski, Barroso, & Hasselblad, 2008) and their somewhat faster variants of mapping or scoping reviews (Anderson & Collins, 2014; Arksey & O'Malley, 2005). Our approach aims at mapping a vast literature framed by a broad theme and report its spatial, temporal, conceptual and thematic trends. It is not a systematic review but a necessary step in informing any robust review.

Second and more generally, we recognise that what is 'evidence' remains deeply contentious even when critically reflecting on its social construction and partiality; this is a well-rehearsed argument (Wallace et al., 2006) which we need not repeat here but which has informed our approach not least through the selection of conceptually informed keywords in the retrieval of the literature. Scholars also emphasised that linking evidence to practice is far from straightforward (Nutley, Walter, & Davies, 2003); this, however, is beyond the scope of this article.

The article advances as follows. The first section positions our approach to systematic literature mapping within the established methods of systematic reviewing, noting its similarities and differences to its close relative, 'systematic maps' (Gough, Thomas, & Oliver, 2012). The second section outlines strategies of retrieving the literature and reflects on the inevitable methodological questions faced during this process. The third section navigates through some of the analytical tools we used and highlights some of our findings. We are purposefully descriptive so that interested readers could replicate or adapt our approach to suit their own research questions. We conclude by arguing that systematic literature mapping can be construed as both a valuable research project in itself and an opening stage towards more focused evidence reviews. While we highlight its significance, we also reflect on some important challenges of representation, which have a wider currency across the social sciences.

### **What is systematic literature mapping?**

Since the early 1970s, systematic reviews have become common practice in health research, aiming to link robust evidence to 'what-works' approaches to policy (Gough, Oliver, & Thomas, 2013): a 'systematic reviewer' there has become an established job title. Systematic reviews have since spread into many fields, particularly education (Evans & Benefield, 2001; Foster &

Hammersley, 1998), anthropology (Kearney, 2001; Noblit & Hare, 1988), criminology and social work (Wallace, Croucher, Quilgars, & Baldwin, 2004), having tangentially reached the housing studies' community (Blandy, Lister, Atkinson, & Flint, 2003; Croucher, Quilgars, Wallace, Baldwin, & Mather, 2003; Wallace, Bevan et al., 2005; Wallace, Croucher et al., 2006). Having contributed to three systematic reviews on housing phenomena, Wallace et al. (2006) reflect on the many challenges faced, mostly related to the interdisciplinary nature of the subject, the fragmented, mosaic-like research coverage of topics in the field, the high diversity of epistemological and ontological positions and of research designs, and the methodological difficulties in assessing the quality of primary studies. For us, these challenges mean that any review should be preceded by robust ways of systematically mapping the broader thematic literature *before* focusing on questions that are more specific.

Systematic reviewing has benefited from expansion to disciplines other than health: systematic reviews have become theoretically more refined as they engaged with broader epistemological and ontological debates, methodologically more sophisticated, and hence typologically more distinctive (Barnett-Page & Thomas, 2009; Gough, 2013; Gough et al., 2012; Sandelowski et al., 2012; Voils et al., 2008).

For instance, Gough et al. (2012) viewed methods of reviewing as positioned along a continuum ranging from the realist to idealist approaches; traditional quantitative meta-analysis is situated at the realist end (aiming to test/aggregate theory, e.g., synthesising controlled trials) and meta-narrative synthesis at the idealist end (aiming to explore/generate theory). Barnett-Page and Thomas (2009) expand this continuum from positivist to highly constructivist approaches, the latter exemplified by the meta-study, aiming to interpret similarities and differences in the 'interpretation of interpretations' across diverse accounts of a phenomenon. Perhaps most relevant to the multidisciplinary and multi-method housing studies, narrative and thematic syntheses aim to delineate and compare homogenous studies (e.g., qualitative, quantitative; or economic, sociological), looking to understand the differences between groups and configure findings into new themes to further knowledge and theory.

For our purpose, the above discussion shows that existing methods of reviewing can now better accommodate the theoretical, methodological and epistemological diversity of housing studies (Wallace et al., 2006). Systematic reviewing in housing studies adopted realist positions in relation to homelessness (Krahn, Caine, Chaw-Kant, & Singh, 2018; O'Campo et al., 2009; Woodhall-Melnik & Dunn, 2016) and environmental issues (Daly, 2017); and moderate idealist approaches in relation to energy use and habitability (McCabe, Pojani, & van Groenou, 2018; Willis, Phillips, Ryan, Bursac,

& Ferguson, 2017), gentrification and gated communities (Atkinson, 2004; Blandy et al., 2003), empty homes (Wallace et al., 2005), mortgage markets (Croucher et al., 2003) and older people's decisions on residential mobility (Roy, Dubé, Després, Freitas, & Légaré, 2018).

Important to our argument is that these studies, just as other systematic reviews, do not report prior literature mappings that may have informed particular review questions. It is worth quoting Gough et al. (2012, p. 5) on 'systematic maps':

To some degree, most reviews describe the studies they contain and thus provide a map or account of the research field. Some reviews go further than this and more explicitly identify aspects of the studies that help describe the research field in some detail; the focus and extent of such description varying with the aims of the map. Maps are useful products in their own right but can also be used to inform the process of synthesis and the interpretation of the synthesis. Instead of automatically undertaking a synthesis of all included studies, an analysis of the map may lead to a decision to synthesize only a subset of studies, or to conduct several syntheses in different areas of the one map.

Gough et al. (2013) identify three reasons for mapping the research field. As a research *project in itself*, it can highlight research gaps and conceptual assumptions. As a *stage to synthesis*, it can refine the research questions of the review by selecting subgroups of studies. Finally, as *direct input* in the synthesis, it can add useful contextual information. However, maps are generally reported in the form of diagrams simply showing the stages of reducing the initially large sample of retrieved literature to a much smaller and relevant subset (e.g., see figures in Daly, 2017, p. 1362; Krahn et al., 2018, p. 78; Roy et al., 2018, p. 6). Our distinctive approach to systematic literature mapping has been particularly inspired by the first two reasons above.

There are, however, key differences between 'systematic maps' and 'systematic literature mapping'. First, the former are more focused, targeting the narrower research questions of the review, and in practice conducted as a stage towards the synthesis. Conversely, the latter purposefully explores a well-defined but much broader academic or policy theme. Second, systematic maps aim to fully and systematically cover all related studies, whereas systematic literature mapping, given the much shorter timeframe, seeks comprehensiveness and rigour but not exhaustiveness. Third, the former generally remains unreported in the final synthesis, whereas the latter aims to transparently report not only the constructing parameters but also the resulting temporal, geographical, conceptual and thematic trends in the retrieved literature. We now proceed to detail this process by focusing on the methodological choices in sourcing the literature in the following section; and by presenting some analytical tools and main findings in the subsequent section. Our approach draws on over 40

articles, chapters and reports we carefully scrutinised. Nine were particularly informative on the methodological decisions made to retrieve the literature up to the finally included studies; 12 offered some details, while 11 were extremely brief (but we benefited from personal conversation with the authors of three of these); another 13 studies offered theoretical and methodological reflection, which we found useful. We embed this literature when presenting our approach along five completed projects.

### Methodological choices in retrieving the literature

In the information age (Castells, 2009), most literature is assumed to be stored or at least indexed digitally. Hence, methods of retrieval are almost exclusively oriented to searching online; this requires some preparatory steps.

#### *Translating aims into Boolean strings*

The projects' aims set the direction of the methodological journey which follows. We have already emphasised that the aims of literature mapping are exploratory and broader than those of their close associates, systematic maps. While systematic reviews focus on narrow questions, literature mapping welcomes broader questions not unlike some of scoping, mapping or evidence reviews (de Jong, Joss, Schraven, Zhan, & Weijnen, 2015; Erasmus, Orgill, Schneider, & Gilson, 2014; Preece & Bimpson, 2019). Across our five projects, aims differed as they were framed by intentions of mapping conceptual trends related to 'policy transfer' in housing (Soaita, 2018b); concepts and substantive findings related to housing aspirations (Preece, 2018); cross-disciplinary patterns in the understanding of place-making (Serin, 2018a); and policies related to housing taxation (Soaita, 2018a) and housing supply (Serin, 2018b).

Aims should be carefully translated into thematic keywords and further into Boolean strings to be imputed in searching queries. Clearly, the parameters set at this stage structure (and bias) the boundaries of retrieved literature. Keywords should obviously unpack all dimensions of the research questions. Table 1 exemplifies this stage across our five projects.

This process of translation can be straightforward as in our 'place-making' project, with just one thematic keyword being purposefully used to capture the multi-disciplinarily nature of the concept, an approach employed, e.g., by Atkinson (2004) in reviewing *gentrification* (keywords: gentrification; gentrifying; gentrified). The process can also be interactive as in our 'policy transfer' project, with an exploratory stage and further keywords added at a later stage. More exactly, we first piloted the keywords



**Table 1.** Translating aims into Boolean strings.

Main focus	Thematic keywords	Summary Boolean strings
Place-making Policy transfer	Place-making Six 'policy transfer' concepts and 'housing'	place-making <sup>1</sup> ("policy diffusion" OR "policy transfer" OR "policy mobility" OR "fast policy" OR "policy translation" OR "lesson drawing") AND housing <sup>2</sup>
Housing supply	Five 'housing' terms and seven 'new supply' terms	(housing OR house OR residential OR dwelling OR apartment) AND (supply OR developer OR "house builder" OR housebuilder OR investment OR investors OR "new homes") <sup>3</sup>
Housing taxation	Strategy 1: housing tax capitalisation, distribution, reform, incidence and evaluation (restricted to the OECD countries) Strategy 2: six UK taxes, each with synonymous forms	Strategy 1: 16 terms across three Boolean strings Strategy 2: 25 terms across four Boolean strings
Housing aspirations	32 keywords	Numerous terms and Boolean strings

## Notes:

<sup>1</sup>In hyphenated and non-hyphenated form (however, many databases, including SCOPUS, read the hyphen as a space). SCOPUS Boolean string: TITLE-ABS-KEY ("place making" OR "place-making") AND (LIMIT-TO (LANGUAGE, "English")).

<sup>2</sup>SCOPUS Boolean string: ALL ("policy diffusion" OR "policy transfer" OR "policy mobility" OR "policy mobilities" OR "fast policy" OR "policy translation" OR "lesson drawing") AND housing).

<sup>3</sup>SCOPUS Boolean string: TITLE-ABS-KEY ((housing OR house OR residential OR dwelling OR apartment) AND (supply OR developer OR "house builder" OR housebuilder OR investment OR investors OR "new homes")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (AFFILCOUNTRY, "United Kingdom")) AND (LIMIT-TO (PUBYEAR, 2018) OR LIMIT-TO (PUBYEAR, 2017) OR LIMIT-TO (PUBYEAR, 2016) OR LIMIT-TO (PUBYEAR, 2015) OR LIMIT-TO (PUBYEAR, 2014) OR LIMIT-TO (PUBYEAR, 2013) OR LIMIT-TO (PUBYEAR, 2012) OR LIMIT-TO (PUBYEAR, 2011) OR LIMIT-TO (PUBYEAR, 2010) OR LIMIT-TO (PUBYEAR, 2009) OR LIMIT-TO (PUBYEAR, 2008) OR LIMIT-TO (PUBYEAR, 2007) OR LIMIT-TO (PUBYEAR, 2006) OR LIMIT-TO (PUBYEAR, 2005)).

'policy diffusion' and 'policy transfer' and examined authors' keywords in the first 50 hits for each. This suggested possible use of 'lesson-drawing', 'fast-transfer', 'policy learning', 'lesson learning' and 'policy making' (after a pilot retrieval, we accepted the first and rejected the others for being sub-/meta-categories, i.e., narrower or broader than our focus). It also returned keywords such as 'europeanisation', 'globalisation' and 'neo-liberalisation' but we also saw them as meta-categories and hence inappropriate for our purpose. Upon further team consultation, we included 'fast policy', 'policy mobility' and 'policy translation' and limited all to the housing field (keyword: housing). A similar approach was used by de Jong et al. (2015, p. 27) in their mapping of *sustainable urbanisation*. They reflect that conceptual keywords should be '*recognized terms in the relevant international academic literature*' and '*taken up, and resonate, in the wider policy discourse*'.

Accordingly, they decided to use 12 terms<sup>2</sup> and rejected others, which were seen as sub-/meta-categories.<sup>3</sup>

For more precise and targeted research questions, such as our 'aspiration' project, Cooke, Smith, and Booth (2012) offered helpful frameworks as tools to select keywords, such as SPIDER (i.e., keywords need to define the characteristics of the: sample, phenomenon of interest, design, evaluation and research type; see e.g., Preece & Bimpson, 2019) or PICO (population/problem, intervention/exposure, comparison and outcomes). Few other studies report keywords and fewer discuss the underlying decisions (Bond, Sautkina, & Kearns, 2011; Carroll, Booth, & Cooper, 2011; Cooke et al., 2012; Lang, Carriou, & Czischke, 2018; Pound et al., 2005; Wallace et al., 2005; Wang, Chau, Ng, & Leung, 2016).

Thematic keywords are then translated into Boolean strings. Boolean strings are constructed by joining the thematic keywords – including all their synonyms and regional/temporal variations – with Boolean signs. A thoughtful consideration of country variations is particularly important when mapping an international scholarship or historical developments (Harkins, 2016; Lang et al., 2018). There is a clear trade-off between constructing looser and multiple Boolean strings versus well-targeted ones (e.g., using OR versus AND, NOT and exact phrases, respectively). The former may return a large sample of little relevant references, whereas the latter rides the risk of missing important references. Some studies report recourse to bibliographical experts to construct relevant Boolean strings (Arksey & O'Malley, 2005; de Jong et al., 2015; Wallace et al., 2005); we did not as bibliographical databases have increasingly become user-friendly, hence accessible to non-specialist use. In all references consulted, only two report Boolean strings (de Jong et al., 2015; Preece & Bimpson, 2019). Table 1 shows three examples but reporting them exhaustively would be tedious as they differ (slightly) between databases.

It cannot be emphasised enough that Boolean strings structure the literature retrieved as we only get what we ask for. With others (Greenhalgh et al., 2005), we found that piloting and consultation within the team and research network was crucial at this stage.

### *Searching the World Wide Web*

It is useful to think of searching in terms of broader versus narrower strategies. Broad searches, generally conducted in systematic reviewing, look in many different bibliographical databases, perform hand-searching within journals of interest, relevant institutional websites and Google Scholar in order to reach exhaustiveness; it may exceptionally look in full text rather than just titles, keywords and abstracts. For instance, Greenhalgh et al.

(2005) reported searching 15 databases, 32 journals and 105 printed books; Lee et al. (2015) searched 10 databases, hand-searched key journals and authors' websites and performed snowballing. Narrower searches, commonly in scoping reviews, will inspect fewer databases and/or journals; limit Google searches to the first 100–200 hits (Anderson & Collins, 2014); and look in the restricted fields of title, keywords and abstract. Many studies (even systematic reviews) report searches performed in between three and five databases (Lang et al., 2018; Malpass et al., 2009; Roy et al., 2018; Wang et al., 2016) and even in just one (de Jong et al., 2015). Opting for a broader or narrower search will depend on the size of the literature – which was small in 'policy transfer' and 'housing taxation' and vast in 'place-making' and 'aspirations' – and the time and human resources available. As all our projects were resourced within 30 days of one researcher's time, we adapted searching strategies to the size of the literature.

There is clearly difficult to navigate across a mushrooming number of databases. For instance, the University of Glasgow online library indicates 22 relevant databases for the subject of urban studies (of which nine are marked as 'key') and 21 for sociology (six 'key' ones). Commonly review studies name all databases searched. Based on recommendations by librarians at the University of Glasgow and Sheffield, we tended to use between two and six of the following databases: ASSIA (Applied Social Sciences Index and Abstracts), IBSS (The International Bibliography of the Social Sciences), SCOPUS, ScienceDirect, SocINDEX, Sociological Abstracts and Web of Science.

While bibliographical databases are clearly useful, they do have some limitations (Evans & Benefield, 2001), e.g., irrelevant or erroneous indexing; they also may not index recent publications, particularly early online publications; and more broadly, questions related to publishers' and journal editors' publication strategies (Chalmers, 2006). Nevertheless, bibliographical databases enable the construction of rigorous and speedy searches and easy retrieval into bibliographical software (e.g., EndNote) – as opposed to the rudimentary searching engines and manual importing of most institutions as we observed by searching World Bank, OECD, Lincoln Land Institute of Public Policy, GOV.UK among others.

Searching algorithms differ slightly across databases, and much between databases and Google Scholar (the latter being particularly frustrating but increasingly common, e.g., Lee et al., 2015; Wang et al., 2016), making analysing literature trends by source of retrieval problematic.

At this stage, a number of pragmatic criteria for inclusion/exclusion in retrieval should be set from the start (and easily imputed in the database search). These may seem quite straightforward. As we were experimenting, we restricted some projects to English language (Preece, 2018; Serin, 2018a;

2018b) but not others (Soaita, 2018a; 2018b). With Lang et al. (2018), we noticed that even without language restriction, the simple use of English keywords will return English text, resulting in an obvious bias unless, for instance, the mapping targets an exclusively UK phenomenon.<sup>4</sup> For theoretical or pragmatic reasons, geographies of interest were restricted to some countries/regions in some of our projects ('housing aspirations', 'housing taxation' and 'housing supply') but not in others ('policy transfer' and 'place-making'). Restrictions on the publishing timeline were likewise posed in 'housing taxation', 'housing aspirations' and 'housing supply' (since 1980, 1990 and 2005, respectively). The type of reference may also constitute an exclusion criterion, for instance books and grey literature, depending on the review aim, discipline specifics, availability of access and time/human resources.

As opposed to systematic reviews, systematic literature mapping – such as scoping, mapping or evidence reviews (Arksey & O'Malley, 2005; Erasmus et al., 2014) – is not concerned with quality assessment as a criterion for inclusion (which requires full-text assessment). There are two reasons for this: their aim is to *broadly* map a research field; and setting quality criteria, commonly on the validity and accuracy of methods, may be controversial in qualitative or mixed-method studies (Wallace et al., 2006). Some studies arguably set quality criteria through the retrieval process by looking exclusively at peer-reviewed articles (Lee et al., 2015) or articles published in journals of minimum 1.5 impact factor and authoritative institution (Wang et al., 2016).

The key thing in systematic literature mapping is that all these methodological decisions are clearly set and reported from the start. Although they are pragmatically necessary to reduce the number of hits, they may be problematic, a point on which we have reflected during our analyses (see also Croucher et al., 2003; Hagen-Zanker & Mallett, 2013; Wallace et al., 2006). For instance, geographical inclusion/exclusion criteria should be theoretically informed, with geopolitical spaces such as OECD always being problematic, whereas reference-type restrictions should be disciplinarily informed. Avoiding time restrictions may have merits in revealing conceptual trends and avoid the bias of 'presentism' (Soaita, 2018b).

### **Sample reduction**

Once the sample of retrieved references is finalised and duplicates automatically removed (e.g., EndNote command 'Find Duplicates'), it should be 'cleaned-up'. Despite targeting searches through Boolean strings, reviewers always get a significant number of references which do not fit thematically. The method of reduction means screening the retrieved references by title,

**Table 2.** Sample reduction.

	Retrieved <sup>a</sup>	Intermediary	Included
Our work:			
Housing taxation	396	–	134
Policy transfer	833	–	247
Housing supply	1,839	n.r.	361
Place-making	2,598	n.r.	1,443
Housing aspirations	3,650	n.r.	340
Others' studies			
Kearney and O'Sullivan (2003)	n.r.	–	13
O'Campo et al (2009)	289	57	15
Malpass et al. (2009)	500	–	15
Krahn et al. (2018)	342	30	6
de Jong et al. (2015)	1,430	–	1,430
O'Malley and Croucher (2005)	2,506	212	131
Arksey and O'Malley (2005)	3,867	453	204
Lee et al. (2015)	5,884	457	46
Greenhalgh et al. (2005)	6,200	1,000	495

Notes:

<sup>a</sup>Commonly after the removal of duplicates; n.r. stands for 'numbers not reported'.

abstract and sometimes full text and retaining those of interest. This process is particularly resource intensive. Wallace et al. (2006) reported a requirement of 40 days of one person's time to screen 4,000 citations; Lee et al. (2015) reported a requirement of four people, unspecified time, to screen 5,884 references. This process is commonly done in stages (all references by title followed by remaining references by abstract) or in one go (by title, if title not clear by abstract, if abstract not clear by full text), depending on the descriptive clarity of title and abstract, the size of the sample and personal preference. Among us, the first author preferred the latter, the others the former. As we had other academic responsibilities, we have not registered cumulative time but the first and last author noted occasionally full-day rates, which ranged between 50 and 100 screened references depending on the extent of manual work required in finding and screening full texts rather than just titles and abstracts.

Table 2 shows the size of the retrieved sample versus that of the reduced sample in our five projects. The lack of any pattern matches the broader field. Retention is highly dependent on topic, narrower/broader research questions and search strategies, and databases' accuracy. While the manual work of screening remains tedious and needs constant refocusing, challenges remain in deciding inclusion/exclusion. No matter how carefully the thematic boundaries are defined from the start, studies may engage with the phenomena of interest incompletely, non-exclusively or in an unclear manner requiring thus full-text reading and ideally team consultation (Hagen-Zanker & Mallett, 2013; Wallace et al., 2006). While systematic reviews have fixed protocols related to the selection criteria (see e.g., Croucher et al., 2003), striking the right balance to achieve the aims of the mapping exercise – broad or narrow – remains a substantive rather than a

methodological question. We borrow Voils's et al. (2008, p. 10) argument that mapping projects '*are best designed by reflexive doing*' rather than '*being done by fixed a priori design*'.

### Examples of analytical devices and findings

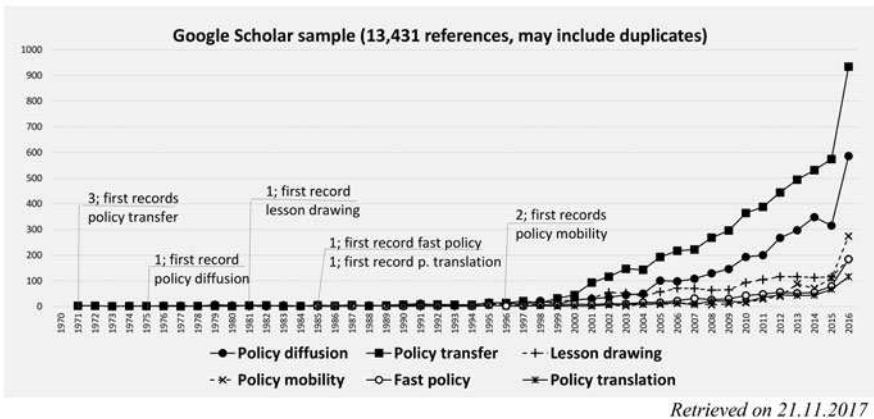
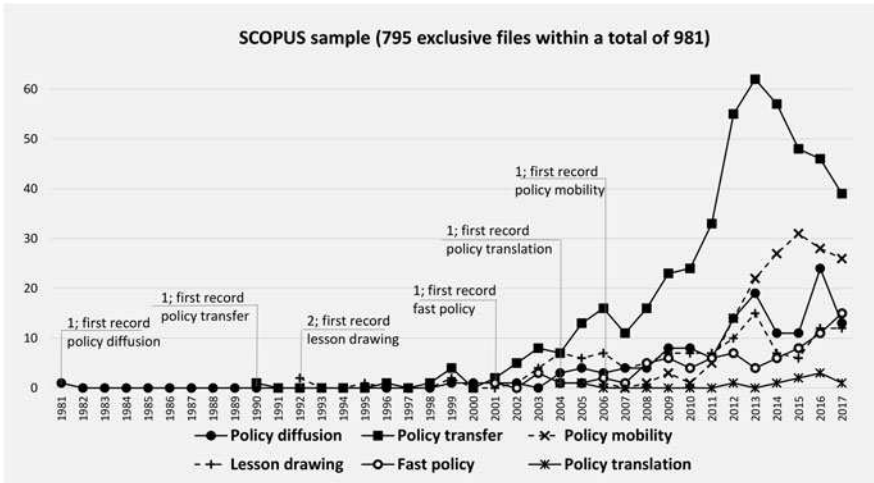
Once the sample has been reduced to the relevant references, different analytical tools can be deployed in order to map temporal, geographical, conceptual and thematic trends, which involve some type of coding. Since the work that underlies systematic maps is rare if ever reported, this section draws almost exclusively on our experiences.

#### *Analytical devices: timeline, conceptual and thematic maps*

As the word 'mapping' suggests, most of our analytical devices take the form of diagrams. We tended to think of them as timeline, conceptual and thematic 'maps', though we also used multidimensional 'maps'. Examples will be selected from Soaita (2018b) but we will mention similar applications in our other projects (Preece, 2018; Serin, 2018a, 2018b; Soaita, 2018a). The choice between different analytical devices obviously matched the aims and the evolving direction of each project.

All our studies reported some form of publishing timeline, in a either descriptive (Preece, 2018) or more analytical stance (Serin, 2018a; Soaita, 2018b). Aiming to explore conceptual trends in the field of 'policy transfer' studies, Figure 1 indicates comparatively the publishing timelines by thematic keywords for the SCOPUS's and Google Scholars' records.

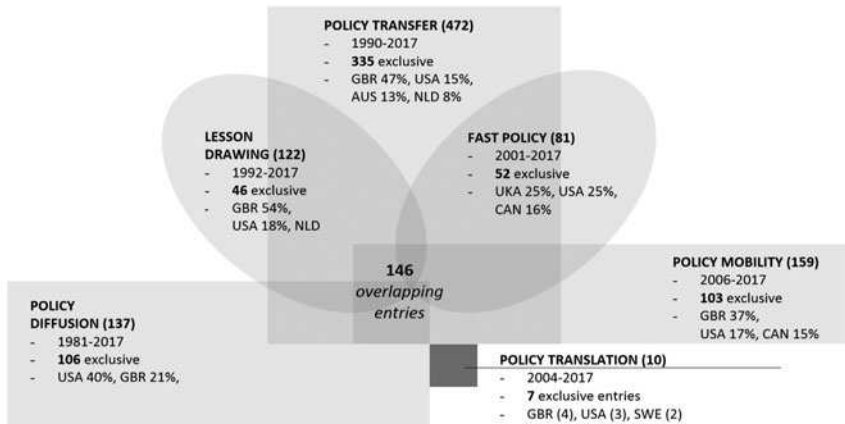
Such 'timeline maps' evidence the historical presence of particular keywords/concepts, their advent and relative popularity. While the searching string was comparable between the two panels in Figure 1, the searching *field* was not. Searching only in title, keywords, abstract and item's references in SCOPUS (top panel) and all text in Google Scholar (bottom panel) was bound to return an earlier timeline and a larger sample by the latter but arguably a higher usage of these respective keywords as concepts in the former. The comparison revealed that the literature subsets engaging with 'policy diffusion', 'policy transfer' and 'lesson drawing' are older than those engaging with 'policy translation' and 'fast policy', with 'policy mobility' literature being the newest. Serin (2018a) developed similar timeline maps, evidencing the development and relative popularity of different dimensions of place-making. If one is interested in reviewing the historical emergence of certain conceptual approaches, timeline maps are useful starting points.



**Figure 1.** Timeline maps. Source: Soaita (2018b, p. 9).

Note: for a similar approach related to the evolution of 12 city concepts in SCOPUS database, see de Jong et al. (2015, p. 29).

Combining temporal, conceptual and geographical lenses, Figure 2 indicates conceptual and geographical affinities. By mapping overlapping and exclusivity and across a keyword-retrieved literature,<sup>5</sup> we documented that the literature of ‘policy diffusion’ is more US-based; those of ‘policy transfer’ and ‘lesson drawing’ are more UK-based and more interactive with each other; and the newest ones of ‘fast policy’ and ‘policy mobility’ are less dominated by one country. de Jong et al. (2015, p. 30) report a similar but more sophisticated approach, which was enabled by use of special software PAJEK (Batagelj & Mrvar, 2011). This allowed them to map the search keywords against papers’ own keywords across the 1,430 retrieved references. While enabling breadth and complexity, the approach has two shortcomings: it requires specialised IT expertise and maps ‘undiscovered’ duplicates



#### Reference bivariate overlap

	Diffusion (137)	Transfer (472)	Mobility (159)	Lesson (122)	Fast policy (81)	Translation (10)
Diffusion (137)	-	27	3	16	3	1
Transfer (472)		-	52	69	26	3
Mobility (159)			-	10	17	1
Lesson (122)				-	5	1
Fast policy (81)					-	0
Translation (10)						-

**Figure 2.** Conceptual and geographical patterns. Source: Soaita (2018b, p. 17).

(which our manual screening, after the automatically removal of duplicates, showed were relatively common).

What we code is obviously dependent on the initial and evolving aims of mapping and the particularities of the topic. Some coding was carried out based exclusively on abstracts (Serin, 2018a; Soaita, 2018a), others by checking full text in a systematic way via ‘Find’ tools (Soaita, 2018b); we refer to both as ‘rapid coding’.

All our studies coded ‘themes’. Some thematic coding can be straightforward, e.g., the study’s method, although Voils et al. (2008, p. 2) found in their systematic review that ‘something other than the method claimed was actually used’. Substantive themes of interest obviously relate to the research questions and the aim of the mapping and they may refer to several axes. They may return to the framework used in setting the keywords (e.g., SPIDER, see Cooke et al., 2012; Croucher et al., 2003) or be more grounded and explorative (Charmaz, 2014). In our work, thematic coding has rarely, if ever, been a one-stage process whether we started with a loosely agreed framework (Preece, 2018; Soaita, 2018a, 2018b) or a completely grounded approach (Serin, 2018a, 2018b). As in any qualitative research, initial frameworks rarely work, needing adjustments, additions and recoding. Likewise, grounded coding induces an unmanageable degree



of fragmentation, requiring recoding to bunch up. This process of rapid coding and recoding can be done interactively (i.e., the initial framework is carefully expanded, see Soaita, 2018a); in a two-stage process (i.e., initial codes are merged into broader categories, see Serin, 2018a); or both (Soaita, 2018b), as appropriate to the topic or the evolving direction of the project.

It could be argued that thematic mapping via rapid coding is the most important analytical device to evidence research gaps or to determine where rich evidence already exists. For instance, coding the taxation literature by type of property (Soaita, 2018a) revealed a focus on owner occupation and a lack of engagement with privately rented housing. Coding case study countries in the 'policy transfer' project (Soaita, 2018b) revealed that only 36 countries were represented as case studies. Furthermore, the highly biased coverage of the UK, US and Australia (58 per cent of the total) was striking as was the non-representation of countries which have been most explicitly subjected to transfer of policies such as the EU post-communist states (Soaita & Dewilde, 2019).

However, thematic mapping can be challenging. First, we discussed that sample reduction looks for thematic (mis)fit, retaining the relevant references. But some references, sometimes many, were rejected for lack of clarity: we simply could not judge whether they fitted thematically because abstracts were missing or unclear, and the text was not available. Given that systematic literature mapping does not aim to be exhaustive, this type of exclusion may be less problematic but it should be carefully assessed in each project.

Second, we found it particularly challenging to code rapidly key themes based on the abstract alone – note that we tried to use multiple coding sparingly – as many abstracts did not contain the necessary detail. In other disciplines, highly structured and standardised abstracts facilitate rapid coding of key research features. Lastly, good practice in systematic reviewing is screening every reference by two independent reviewers in order to avoid personal bias (Greenhalgh et al., 2005; Lee et al., 2015), whilst we were unable to resource this, clearly consulting team members and colleagues is highly beneficial.

## **Findings**

Some findings are straightforward to extract, particularly journal representation. For instance, Soaita (2018a) found that housing taxation literature is particularly spread across many journals: 34 references looking comparatively at some OECD countries were spread across 27 journals; 54 references looking solely at the UK were spread across 34 journals; and only seven

journals figured in both samples. Such high degree of dispersion makes it difficult to stay informed on this academic subject. However, dispersion across journals was high in all our other studies, clearly beyond one's capacity to casually monitor the literature. This clearly indicates the need for systematic literature mapping to become regular practice across academia, at least at its very basic level of informing traditional literature reviews.

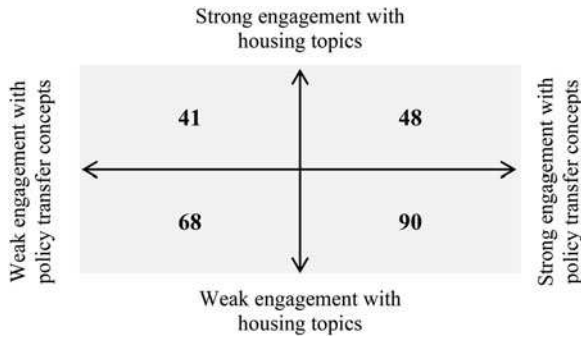
Flagging key journals, articles and authors in the field may appear straightforward and useful if one is not troubled by 'black-box' algorithms measuring 'relevance' or by the social construction of citations (including through unequal access to 'open access' funding). These should be problematised since the aim of literature mapping is to reduce the bias of representation within the digital space. In fact, mapping geographical (non)representation by either country of case study or university affiliation – the latter a more time-intensive endeavour – framed some important findings, albeit confined to an English language-based literature. Soaita's (2018b) analysis found that geographies of case studies and of first-author affiliation were highly correlated despite cross-country collaborations, evidencing once more that academic knowledge, like any other knowledge, is *situated* (Haraway, 1991), including geographically.

We will next highlight a few key points on a project-by-project approach. The policy transfer literature has been influenced by the 'mobility turn' (Sheller & Urry, 2006). Broad policy domains most represented – as per our coding system – were, in descending order, planning, multi-level governance, affordable housing and homelessness. There was also a clear engagement with theory, which came as a topic second to planning.

Likewise, the place-making literature has been influenced by the 'spatial turn' (Warf & Arias, 2009). Using Carmona, Tiesdel, Heath, and Oc (2010) typologies related to the governance and dimensions of urban design – morphological, perceptual, social, visual, functional and temporal – Serin (2018a) evidenced that the social and perceptual dimensions of place-making were dominant, being discussed across social science disciplines, while the visual and morphological dimensions were least represented.

The housing choice and aspiration literature evidenced that terms, such as choices, preferences, expectations, aspirations and decisions, are often used interchangeably and lack clarity. Since they may therefore refer to a range of behaviours and draw on different drivers and motivations, Preece (2018) indicated this as a key area for future research.

Finally, the housing taxation and supply literature tends to be policy descriptive and prescriptive. While there is substantial engagement with the taxation of imputed rent in homeownership (Soaita, 2018a), our project revealed a lack of engagement with the taxation of privately rented



**Figure 3.** Conceptual and thematic engagement. Source: authors' graphics.

property, which reflects the relatively recent attention to this housing sector (Soaita et al., 2017). Before concluding this article, we will next give a final example of the way in which systematic literature mapping may prepare the ground for evidence reviews.

### *Opening the stage for evidence reviews*

The 'policy transfer' study can exemplify how mapping may serve as an opening stage for more in-depth evidence reviews. Surprised by the larger than expected size of the literature and suspecting that some of this literature engages only marginally with housing topics and ideas of policy transfer, we aimed at coding the strength of engagement along these two axes (Figure 3). Parameters for coding engagement were devised (reported in Soaita, 2018b), and a simple and useful 'map' was produced.

Figure 3 shows 48 references strong on both dimensions of engagement, on which we focused further in the related evidence review (in progress). But there are merits in exploring the other 41 and 90 references that are strong in just one dimension. For instance, why do many 'policy transfer' scholars engage only marginally with housing phenomena? Likewise, why do many housing scholars engage only marginally with 'policy transfer' concepts? What other concepts do they prefer or find more useful? At the mapping stage, we observed interesting lines of difference between these studies' epistemological and ontological assumptions, which informed our evidence review. Preece and Bimpson (2019) also mapped references' degree of substantive and conceptual engagement related to mechanisms of exclusions in housing systems, grouping studies into 'priority 1' which constituted the basis of the evidence review; 'priority 2' (robustness of empirical approach but loose substantive fit) and 'priority 3' (novelty) to be used strategically; however, the underlying criteria were not reported.

By informing the scale and focus of the review's questions, systematic literature mapping contributes to advancing housing theory and knowledge.

## Conclusions

By drawing on five projects we have undertaken (Preece, 2018; Serin, 2018a, 2018b; Soaita, 2018a, 2018b), this article has aimed at explaining our understanding of what systematic literature mapping is and is not, the different ways in which it can be performed, and what kind of findings it may unearth. We showed in the second section that most systematic reviews include a stage of getting a feel for the literature through 'systematic maps' (Gough et al., 2012). This clearly inspired our approach to literature mapping which we defined along two dimensions: a time-limited, systematic search for literature related to a well-defined but still broad academic theme whose parameters and limits are openly set from the start; and the exploration and synthesis of key temporal, geographical, conceptual and thematic features of this literature. While systematic literature mapping is *not* a systematic review aimed at answering specific questions by synthesising studies' findings, it can form a critical opening stage for any such review.

Close relatives to systematic literature mapping are the 'systematic maps' used in reviewing – though rarely fully reported – which we adapted to match our different aims. There are key differences between 'systematic maps' and 'systematic literature mapping' with the latter being broader, more explorative, more transparently reported and less exhaustive in their literature coverage than the former. Systematic maps tend to be conceived as a stage of the systematic review, while systematic literature mapping tends to be a research project in itself. This article reported in detail the methodological journey of literature retrieving and analysis through timeline, conceptual and thematic maps so that interested scholars and students could replicate and adapt the process to suit their own research. We also gave some examples of findings.

Returning to Gough et al.'s (2012) view on the merits of exploring the research field, our discussion showed that systematic literature mapping, as a *project in itself*, brings invaluable insights into highlighting research gaps and areas where evidence is already rich; discovering conceptual and geographical patterns; and indicating how research approaches shift over time. We also demonstrated that literature mapping can be a crucial *stage* towards evidence reviews in that it can formulate new research questions as well as delineate subgroups of studies for analysis. Indeed, our literature mapping was mobilised to inform related evidence reviews (Preece, Crawford, McKee, Flint, & Robinson, 2019) and to offer contextual information in other reviews (Lenoel, Matsu, & Naisbitt, 2018). Like any sound

methodology, systematic literature mapping can thus contribute to the advancement of housing knowledge or theory. Besides these two central roles, we argued there are merits in conducting literature mapping even at its very basic level, that is retrieving systematically a set of relevant references in order to construct more inclusive traditional literature reviews and, more generally, to keep up with an ever-increasing cross-disciplinary housing scholarship.

Of course, methodological challenges remain. We add our voice to other scholars (Wallace et al., 2006) who reflected on the challenges of mapping housing literatures, such as unstructured information in abstracts, unsuitable keywords and titles which make articles undiscoverable and unclear from the perspective of reviewing. Efforts to systemise keywords and subject classifications, structure abstracts and achieve an unambiguous understanding between journals, databases and scholars in the social sciences would be welcomed. Questions also remain regarding the inclusion or exclusion of grey literature, books and reports and Google Scholar searches.

While such methodological challenges may be addressed pragmatically on a project-by-project basis, it should be recognised that methodological decisions have important consequences, leading to questions of representation. For instance, our linguistic limitations only strengthen the existing English bias in the academia in terms of conceptual work, policy experiments, promotion of findings and citations. The fact that each project received 30 days of one researcher's time obviously encouraged a trade-off between depth and breadth, which may not always be desirable. Nevertheless, systematic literature mapping is a useful tool in understanding the shape of a topic and may help to direct funders' resources to under-researched areas. Through systematically mapping existing research, we can indeed develop a better knowledge of what is evidenced, silent and assumed.

## Notes

1. Search performed on 5 December 2018, excluding patents and citations.
2. 'Sustainable city', 'eco city', 'low carbon city', 'liveable city', 'green city', 'smart city', 'digital city', 'ubiquitous city', 'intelligent city', 'information city', 'knowledge city' and 'resilient city'.
3. For example, 'slim city', 'creative city', 'transition town' and 'compact city'.
4. In 'policy transfer' where English restrictions were not used, searches returned a few non-English articles which were published with an English abstract.
5. Overlapping is search through the Boolean operator AND, e.g., ("policy transfer" AND "policy diffusion") and exclusivity through the Boolean operators AND NOT, e.g., ("policy transfer" AND NOT "policy diffusion").

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