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Review

User participation in urban green spaces – For the people or the parks?

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ABSTRACT

The provision and administration of high quality urban public green spaces intertwines issues of planning, design, management and maintenance with governance. The benefits of such spaces are often tied to social justice, public health and recreation, biodiversity and helping cities to deal with climate change. International policies and changes in public administration have encouraged user participation across multiple phases of green space development. Although sceptics towards participation are easily found supporting arguments sometimes stand without critique, not questioning how participation affects the physical quality of green spaces. This literature review surveyed empirical scientific studies seeking to answer the following research question: How does research to date reflect over user participation's contribution to public urban green space quality? The review includes 31 articles from peer-reviewed scientific journals and finds an array of arguments used to support and attribute potential benefits to participation. However, analysing what has been empirically tested in these articles shows an even and general lack of proof for these arguments, implying that many arguments for participation are taken for granted. A particularly large disparity was found between the discussing and testing of many arguments regarding how participation may *directly* benefit urban green spaces. Rather than assessing the physical outputs of participation, most of the empirical studies tested process benefits to users and administrators. Due to the discovered predominance of these process-driven studies, it remains unclear whether participation actually improves green spaces, or if it is just for the benefit of the people involved. The gap in scientific knowledge found here calls for a re-focus to case level research, empirically testing where the actual benefits of participation lie and how participation processes might best lead to high quality green spaces in practice.

1. Introduction

The provision and administration of high quality public green spaces in cities and towns is a practical realm that intertwines issues of planning, design, management and maintenance with governance. The benefits of such spaces are often tied to social justice, public health and recreation, biodiversity and helping cities to deal with climate change (e.g. Thompson, 2002; Konijnendijk et al., 2013). Such benefits link these spaces significantly to contemporary city planning goals for sustainability, particularly as planning thought has developed since the Brundtland Commission's (1987) definition of sustainability. Subsequent international policies, such as the Agenda 21 action plan (UNCED, 1992) and the EU's Aarhus Convention (Stec et al., 2000) have been characterized by the general goals of balancing economic, social, and natural equity. However, the priorities and implementations of such initiatives vary a great deal with local context (Voisey et al., 1996), allowing for multiple interpretations of sustainability that guide green space administration. More recently, many of these ideals have been elaborated into separate, but similarly future-oriented, lines of thought including resilience thinking and ecosystem services – focusing on benefits to current and future user well-being and environmental performance (Tzoulas et al., 2007). Despite similar scope, the multiplicity of priorities and practices within green space administration remains as an onus upon researchers who seek to evaluate results against intentions and products against practices.

Different experts define public urban green spaces through their own academic or practical orientations, priorities, and goals – resulting in plurality and complexity in any attempt to define green space "quality" (Lindholst et al., 2015). Adding to many

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expert voices are those of the people; one of many takeaways from both Agenda 21 and the Aarhus Convention has been the goal of bringing citizens closer to the places and services they use. Including the voices of users in governance, planning, and even design and management processes adds to the complexity. Asides from civic involvement in the early planning phases for green spaces (e.g. Loures and Crawford, 2008; Tortzen, 2008; Van Empel, 2008), some localities have further delved into sustainability goals by developing programmes where citizen-users physically take part in ongoing maintenance (e.g. James, 2003; Delshammar, 2005; Speller and Ravenscroft, 2005). Distinguished as *civic* and *physical participation* respectively from this point forward in this article, these forms of involvement integrate users with the series of professions that are responsible for the provision and sustainment of quality green spaces.

Through inclusion of the people in voice or action, green space governance meets theory from deliberative democracy and communicative planning. Today, such participation is promoted across multiple phases of green space development. Leroy and Arts (2006) described how roles and responsibilities have changed during the past decades – environmental governance is no longer purely government-dominated, but also involves civic society, as well as the market. This has resulted in a range of new associated interactions, institutions and practices – all of which vary greatly with context and thus question general or universal conceptual assumptions about participation. Both supporters and sceptics of participation are easily found in the academic debate – proponents cite bettered solutions through participation while counterarguments stress downsides such as inefficiency due to multiple stakeholders, highly varying perspectives and insufficient knowledge bases (Van Herzele et al., 2005b). The breadth of this debate illuminates the range in opinion possible over what characterizes, and which practices result in successful participation, compounding the question of what makes quality green spaces. Together these questions define a complex, but growing field for evaluative research.

Research can provide an unbiased platform to empirically test and form understandings of participation processes, testing theory and policy against actuality, context, and practical implementation. However, due to the number of academic perspectives and practical views on participation, the field remains at risk of inconsistent methodology and reinterpretation of findings without consideration to context. Thereby, the sometimes uncritical popularity of participation can combine with disparate goals for public urban green spaces to form a potentially weak, subjective foundation for grounding empirical studies. Even as early as the 1960s, Sherry Arnstein (1969) warned that participatory processes applied blindly become "empty rituals", and need to be evaluated by citizens' actual effect on process output. Amidst all of this complexity, an overview is needed of research-to-date in order to benchmark and assess knowledge, trends, and gaps regarding participation's outputs in relation to green spaces.

1.1. Research questions

This survey of empirical scientific studies seeks to answer: How does research reflect over user participation's contribution to public urban green space quality? To answer this, three sub-questions are employed, the significance of which are explained in further detail in the next section.

A. What types of participation are in focus in the research? The types found will be analysed in terms of which phase of green space development they contribute to. Phases of green space development in this article are categorized by the *making* phase – where green spaces are planned, designed and constructed – and the *keeping* phase – or the ongoing work of management and rehabilitation of existing green spaces, including maintenance operations and systemic park policy making.
B. What arguments are used to support user participation in green spaces? These arguments will be analysed in terms of which dimension of green space development they support (users, administration, or green spaces) following Randrup and Persson's (2009) 'park-organization-user model'.
C. What empirical evidence exists in the reviewed articles for arguments linking user participation to green space quality? This will be analysed through the same model as question B to compare results from the reviewed research against rhetoric, focused primarily upon the dimension of green space development.

1.2. Definitions and background to the analysis

Green space development can be understood as the arena where participation processes can affect green spaces. Developing this thought through definitions in the following sections explains the selection of analytical framework for this literature review.

1.2.1. User participation

The concept of participation may be understood through many terms, but the important signifier here is *user* – demonstrating a localness of the target group. *Users* are the people or groups who regularly or potentially inhabit and interact with a space, a specific part of the public. With this article's focus on publicly accessible spaces, *public participation* is a general starting point to discuss user participation. *Public participation* and *public involvement* are often used interchangeably, but hold different nuances (Väntänen and Marttunen, 2005). Whereas the term *public involvement* includes the public in decision making without necessarily guaranteeing effects upon the end result (World Bank, 1993), Arnstein (1969) stresses that *participation* should give access to process as well as an amount of power to affect outcomes. The use of these terms as synonyms shows that participation notions then can range from consultation without influence on decision to integrated cooperation (World Bank, 1993) – a span that opens scholarly debates over process, outcome, and participation ideals.

Both *participation* and *involvement* can be seen as attributes to the concept of *civic engagement*, which the World Bank (2013) defines as

> "the participation of private actors in the public sphere, conducted through direct and indirect interactions of civil society organizations and citizens-at-large with government, multilateral institutions and business establishments to influence decision making or pursue common goals. Engagement of citizens and citizens' organizations in public policy debate, or in delivering public services and contributing to the management of public goods, is a critical factor in making development policy and action responsive to the needs and aspirations of the people and potentially of the poor."

This definition further distinguishes between what this paper terms as *civic participation* and *physical participation* – a distinction that holds important implications regarding how directly participants might influence green space quality. Physical participation can directly affect a green space while civic participation typically requires additional implementation steps. Examples of these in respect to the making and keeping of green spaces are provided in Table 1.

1.2.2. Public urban green spaces

Public urban green spaces are defined as openly accessible areas with individual trees, smaller designed sites and larger nature-like

Table 1
Types of participation over phases of green space.

Phase	Type	
	Civic	Physical
Making	e.g. design or plan input or negotiation over Master plan decision	e.g. construction of new site incl. e.g. tree planting
Keeping	e.g. input in management decisions; fundraising and lobbying	e.g. tree assessment; maintaining vegetation (incl. tranining in doing so)

settings in connection to built-up areas, as typically distinguished within public space (Carmona, 2010) and green space management literature (Dunnett et al., 2002; Randrup and Persson, 2009). Dunnett et al.'s (2002) report on improving urban parks in the UK explains that the term *urban green spaces* connotes more than individual *parks*, gardens and playgrounds, thus opening *urban green* discussions to street trees and less categorized spaces that are often included within *green infrastructure* (Lafortezza et al., 2013) or *urban forestry* (Randrup et al., 2005).

The words *public, urban* and *green* connote significant spatial quality aspects when assembled. *Green spaces* are particularly rare in *urban*, built-up areas and particular administrative challenges emerge due to *public* use. Typically characterized by unsealed, permeable, 'soft' surfaces such as soil, grass, shrubs and trees, *green* can be understood in contrast to the *grey spaces* that characterize much of built-up areas – those predominantly sealed, impermeable, 'hard' surfaces such as concrete, paving or tarmac (Dunnett et al., 2002). The ecological implications of this contrast has demonstrated green spaces to be of particular importance to cities for potential societal, economic, health and environmental benefits (Konijnendijk et al., 2013).

1.2.3. Green space quality and place-keeping

For cities to reap the ecological benefits of green spaces, the "delivery of space quality" is vital for keeping them from deterioration and malfunction (Carmona et al., 2008, p. 8). Yet question, complexity and subjectivity remain within the concept of green space quality (Lindholst et al., 2015). Green space quality can neither be summarized into a universal definition nor assessed by a singular model or assessment tool. How quality is assessed depends upon what type of quality is in focus, who decides upon it and for whom it is intended. An important question is whether green space quality should be assessed objectively by experts or subjectively and perception-based by the public. A combination of the two has been promoted for user-focused quality assessments of the built environment (Dempsey, 2008), of urban environmental quality (Pacione, 2003) as well as of visual landscape quality (Daniel, 2001). Quality can have different assessment implications at different urban scales, since different details come into focus when considering, for example, the quality of an individual garden or an entire neighbourhood (Dempsey, 2008). On one hand, one might judge quality with an ecological focus and interest in plant primary productivity, defining urban green space quality as *level of vegetation cover* and *tree-cover* (Davies et al., 2008). On the other, the user-centred, subjectivist paradigm of landscape quality assessment regard quality as a production of the mind rather than physically inherent in the landscape, thereby defining quality based on interpretation through memories, associations, imagination and symbolism (Lothian, 1999). As this review encompassed articles of varying scales and perspectives, this article holds a mid-range definition of green space quality. Guided by the research question of user participation's contribution to public urban green space quality, i.e. influence upon *physical* green spaces, the definition of quality for this article includes objectively testable, physical aspects of ecological and user functionality, including the range of ecosystem services that users may appreciate – how the green space performs environmentally and meets local needs for use.

Despite many perspectives on green space quality, the processes and actors responsible for its delivery have been succinctly compiled and framed in literature on *green space management* (Randrup and Persson, 2009) and *place-keeping* (Dempsey and Burton, 2012). These realms illuminate the complexity of actors involved in public urban green space development. Dempsey and Burton (2012) coined the term place-keeping with the purely user-based definition of green space quality in that quality spaces are those which users want to "visit again and again". While differing from the physical green space quality focus of this review, the place-keeping concept emphasizes the important, ongoing time-aspect of green space development. They further name the interrelated dimensions of place-keeping which should be taken into consideration in both the making and keeping of green spaces to ensure sustained quality – namely Partnerships, Policy, and Governance as well as Funding, Evaluation and Design and Management (Dempsey and Smith, 2014).

More aligned with assessing physical green space quality, in green space management literature, Randrup and Persson (2009) offer a 'park-organization-user model', framing three dimensions – "users", "managers", and "urban green environment". The diagram in Fig. 1 was adapted from their model for this review by re-clarifying the three dimensions as *users*, *administration*, and *public urban green space.* Herein, the type of green space was specified and the management actors were broadened to administrators to encompass any potential participation initiators. *Administrators* or *administrative actors* here refer to actors potentially receiving input from participation processes, ranging from regional administration actors to local park maintenance workers – most often meaning municipal entities with responsibility over green space development, i.e. the making and keeping of green spaces. The original framework held a one way vector from green space to (i.e. benefiting) users, demonstrating an instrumental or representative democracy stance to green space management where only the administration provides services towards high quality green spaces for users (Molin, 2014). The adaptation adds a vector to recognize that users can also directly impact green spaces through physical participation, thereby updating the model to include new modes of governance, such as place-based approaches, that are present in contemporary urban green space development (Ibid.).

The division of *physical* and *civic* types of participation, mentioned in the introduction of this article, can be charted on this adapted framework – highlighting respectively the difference

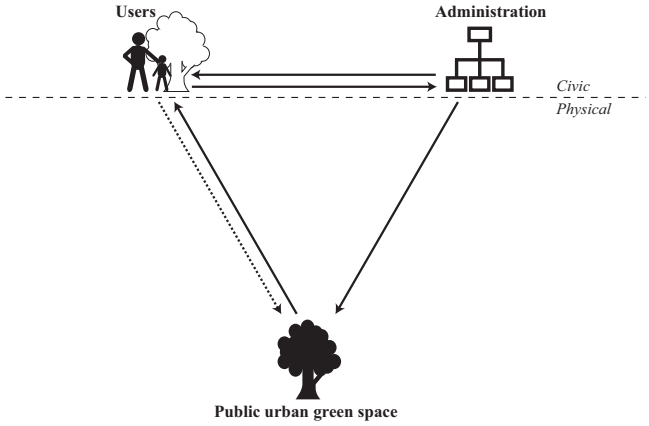

Fig. 1. Analytical framework for understanding participation in green space development through actors and dimensions impacted.

between processes involving the actual green spaces and interactions primarily between the administration and users. Charting research findings and propositions along this framework will relate aspects of participation to green space administration dynamics, allowing the analysis of which dimension of green space development the participation research has focused upon.

2. Method

To understand how research to date has linked participation with green space quality, a literature review was designed with the aim of seeking an overview of relevant empirical work.

2.1. Search terms and test searches

The definitional ambiguity and many synonyms for the terms *participation* and *urban green space* demanded testing a range of search terms to exclude as few relevant articles as possible. Initial trial searches for literature demonstrated that *participation*, *involvement*, and *engagement* are often used interchangeably despite the theoretical nuances previously described. As the inclusion of each significantly increased the number of search hits, all three were determined important.

Initial searches also demonstrated a lack of consistent terminology for referring to urban green spaces. Terms and keywords used could be case-specific, referring to *parks* or *urban forests*, or more systemic at a larger spatial scale referring to *urban forestry* or park systems in *green infrastructure*. Trial and error revealed much higher and more relevant 'hit' numbers when each of the terms *park* and *urban forest* were added to *green spaces*, while *green infrastructure* did not contribute new hits after adding these terms to those regarding participation. The word *urban* was intentionally dropped from *urban green space* during the search term definition due to potential synonyms and alternate wording (i.e. city, town, etc.), so the urbanity of green space type became a significant limiting factor during the initial manual screening of the search hits for relevancy.

Following several trial searches, a string that would include all possible combinations of the following terms was deemed most encompassing: ['participation' OR 'involvement' OR 'engagement'] AND ['green spac*' OR 'park*' OR 'urban forest*']. Although we feel that the selected search terms served the purpose of this review and helped provide a sound overview of relevant literature, we are aware that adding additional search terms could have generated additional articles. However, a review article is always a balance between research questions asked, the scope of the literature, and available time and resources.

2.2. Limiting the literature search

With inspiration from systematic literature review methodology, this review sought quality articles which could illustrate multiple perspectives within the research theme (Petticrew, 2001; Guitart et al., 2012; Roy et al., 2012). Systematic review methods ideally encompass an exhaustive search of all databases and sources published or unpublished on a topic (Petticrew, 2001), but the breadth and abstractness of this topic's key concepts forced an amount of constraint into the research design – limiting the study. Expanding the search with synonyms to not exclude potentially relevant articles simultaneously allowed in many irrelevant alternative uses of each term. The extremely high numbers of search results required careful and time-consuming manual reviews of each article to determine relevance. For this reason, the initial literature base to be searched was further limited to only include:

- Peer-reviewed scientific articles – to ensure an equal level of quality and similar academic intent amongst the work. This limits the search results and introduces a bias to the body of literature reviewed.
- Empirical articles based on original research, i.e. no conceptual articles, review articles or descriptive case studies – to focus the discussion on what outcomes of participation in relation to green space quality are being tested.
- Articles in English-language publications, which include the most relevant international journals while allowing for equal review depth and understanding of the works.
- Articles referring to user participation in the making or keeping of public urban green spaces – to distinguish from other definitions, i.e. participation as use of green spaces, or green spaces not publically accessible within built-up areas.

The search was carried out between February and May 2013. The databases Scopus and Web of Science were chosen for the relatively high standard of research and consistency of peer-reviewed papers within the results. While these sources were not exhaustive, based on experiences from earlier reviews these databases can be understood as roughly representative (Konijnendijk et al., 2013).

In Scopus the search string was used under the search category 'title-abstract-keywords', and in Web of Science under 'Topic'. This yielded an initial 2940 articles to be reviewed further for relevancy (1761 in Scopus and 1179 in Web of Science, with some overlapping results). The scope of understanding the different uses of the search terms in fields such as neuroscience and biology led to the need for excluding journals that do not focus on urban planning, design, or management issues. The closest journals to the study theme excluded during this step were in the fields of atmospheric environment, wildlife research, medicine and marine areas as well as environmental- and conservation management. Hit results, particularly from these borderline fields were manually checked during the journal exclusion process to ensure that potentially relevant articles were not being lost. The final search returned results from 14 journals in Scopus and 13 journals in Web of Science (see Fig. 2).

After these limitations, the search returned a total of 308 hits, of which 34 were duplicates, resulting in 274 unique hits to be manually reviewed against the article qualities and topic relevancy established in the previous sections of this article. This step primarily removed articles not containing empirical work and then read closer into each study's focus. Special consideration regarding relevance was made for articles falling within studies of national parks – those not located in cities were omitted for not qualifying as *urban* green spaces and those evaluating participation by non-local special interest groups were omitted as not dealing with *user* participation – resulting in omission of national park studies. Further, a handful of leisure articles were removed from the review upon finding that their field's definition of participation did not extend beyond actively using parks and green spaces. Leisure articles that did deal with participation in the making and/or keeping of green spaces remain in the review. Fig. 2 illustrates the range of field in the search results versus those finally selected for review.

From this step, 26 articles met the review criteria and were read for further review. After the initial readings, attention turned to the reference lists in a method known as 'snowballing', and five additional relevant articles were found and reviewed, for a total of 31 articles. While *community garden* was not an original search term due to the special nature of the typology and often lack of public accessibility, three studies about urban, publically open community gardens were found and included.

2.3. Analysis

The in-depth reviews of the 31 articles began with careful reading and note-taking. A Microsoft Excel spreadsheet was compiled and used to guide the note-taking and organize information

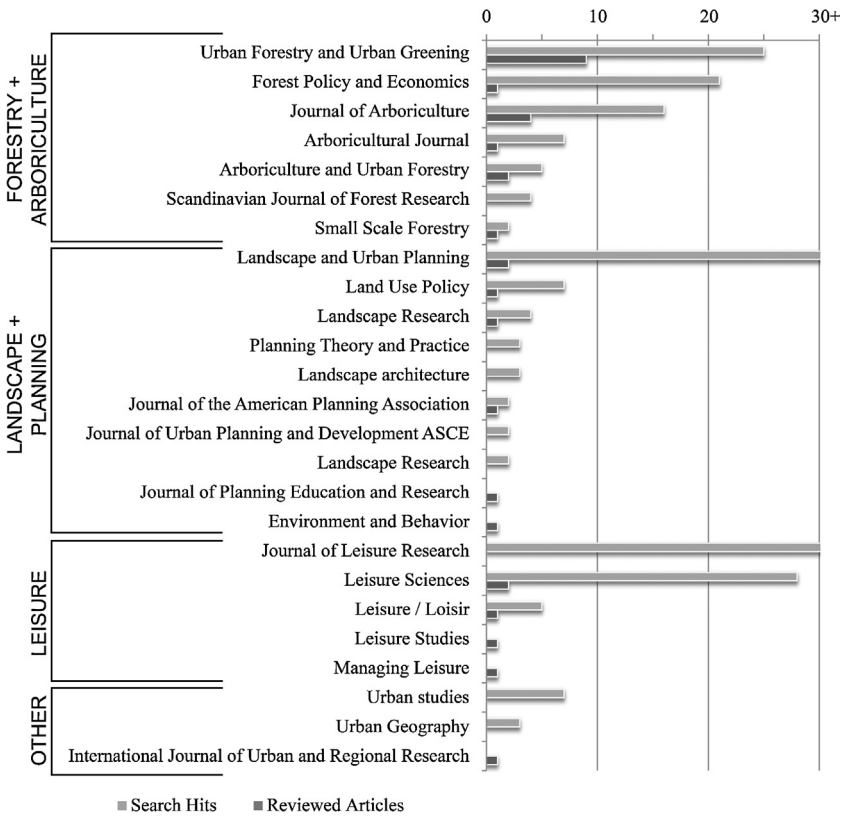

Fig. 2. Journals and academic fields represented in the search vs. final results. N.B. that the Journal of Arboriculture was renamed into Arboriculture and Urban Forestry in 2005.

that could potentially be compared later. The spreadsheet was designed to systematically log each article's basic publication information, aim(s), methodology, main arguments and findings. Using a grounded theory approach – where trends apparent in the data material guide further analysis (Denzin and Lincoln, 2011) – categories were added to the spreadsheet to better sort the logged notes. The resulting 27 categories are shown in Table 2.

The body of data collected was explored for trends to structure further analysis and better define the research questions. While the literature review began with the intent to analyse how participation in green space management affects physical green space quality, i.e. participation in the keeping of green spaces, the utter lack of articles testing this lead to broader research questions about how participation in all phases of green space development has been researched. The ranges of study aim and focus within the body of literature alerted the reviewers of the need to sort the data by spatial scale, type of participation, and phase in green space development. Trends and disparities found within sorting the articles thus organized the rest of the analysis. Despite broad differences in studies, comparisons of the deeper content of the articles were possible – many researchers drew upon similar arguments to support participation, so focus turned to how those arguments are used.

In order to understand why the effects on the physical green space did not seem to be in focus in the reviewed articles, Randrup and Persson's model (2009) was adapted into an analytical framework to chart how participation processes in the literature affected public urban green space, users and administrators over the two phases of green space development (see Fig. 1). The framework allowed connections to be drawn between participation and green space quality – counting, comparing and assessing directness between the dimensions. This process emphasized how administrators, users, and green spaces each hold roles affecting green space quality, potentially benefiting from participation. Detailed explanations of how the framework was used in conjunction with the categorized notes from the literature are offered throughout Section 3.

3. Results

The results of the literature review are introduced here with general characteristics of the research, followed by sections organized by the three research sub-questions and a summary section responding to the main research question.

3.1. General characteristics of the body of research

The relevant research fields focusing on user participation in urban green spaces help to explain trends and limits found later in the analysis. Despite limitations imposed on the literature search, the resulting articles still vary, representing the range of research on participation in urban green spaces (see Fig. 2). While many articles were deemed irrelevant to the review, a span in field and topic still remained after their exclusion. Urban forestry is well represented, holding the highest number of articles within the journal Urban Forestry and Urban Greening.

3.1.1. Geographical location of studies and year of publication

Table 3 lists articles by author, year and study location. These results are mapped in Fig. 3, using a conventional division into seven continents. An interesting gap was quickly noticed between the first two articles in the early 1980s and the remainder following after the latter half of the 1990s – highlighting the topic's popularity today. In spite of the age of the two early outliers it was decided to include them as they did not stand out in content and were likely precedent for many of the more recent articles.

Table 2
Categories according to which the data from the reviewed articles was organized.

General information (for sorting and comparison)	**Categorized data excerpts** (for further in-depth analysis)
Full citation	*Who are/characteristics of the user-participants?*
Author(s) and their affiliations	*Results of study*
Title	*Conclusions about participation in green spaces*
Year of publication	*Arguments for participation*
Journal name	*Participants' motives for participation*
Volume, issue, pages	*Operationalization of quality or quantity/success criteria for participation processes*
Keywords	*Is user participation attributed to green space -, user -, or administration benefits*
Study location	*Which sections of the paper mentions the green space and how (descriptive/analytical) is it related to participation*
General focus of the article	*Connections found and discussed between user participation and the green space, administrative actors, and/or users*
Aim of study	*Type and scale of green space*
Natural/social science background	*Type of participation studied*
Quantitative/qualitative methods	
Methods used	

Table 3
Reviewed articles listed by author, year and study location. The "Key" column here corresponds to markers in Fig. 3, where X denotes studying participation processes; O articles build cases for potential participation; and – reflects indirectly over cases after participation has been implemented. See Section 3.1.2 for elaboration.

Key	Author	Year	Journal	Study location	Country
–	Kaplan	(1980)	*Environment and Behaviour*	Berlin	Germany
O	Crompton et al.	(1981)	*Leisure Sciences*	Michigan	U.S.A.
X	Bloniarz and Ryan	(1996)	*Journal of Arboriculture*	Texas	U.S.A.
X	Still and Gerhold	(1997)	*Journal of Arboriculture*	Brookline, MA	U.S.A.
X	Nannini et al.	(1998)	*Journal of Arboriculture*	~	U.S.A.
O	Konijnendijk	(1999)	*Arboricultural Journal*	Sacramento	U.S.A.
X	Jones	(2002a)	*Leisure Studies*	St. Louis	U.S.A.
X	Jones	(2002b)	*Managing Leisure*	~	Europe
X	Van Herzele	(2004)	*Journal of Planning Education and Research*	~	U.K.
X	Glover et al.	(2005)	*Leisure Sciences*	~	U.K.
X	Sipilä and Tyrväinen	(2005)	*Urban Forestry and Urban Greening*	Antwerp	Belgium
X	Straka et al.	(2005)	*Journal of Arboriculture*	Helsinki	Finland
X	Fleming et al.	(2006)	*Arboriculture and Urban Forestry*	South Carolina	U.S.A.
X	Parkin et al.	(2006)	*Urban Forestry and Urban Greening*	~	U.S.A.
X	Ricard and Bloniarz	(2006)	*Urban Forestry and Urban Greening*	Grahamstown	South Africa
O	Sanesi and Chiarello	(2006)	*Urban Forestry and Urban Greening*	New England	U.S.A.
X	Townsend	(2006)	*Urban Forestry and Urban Greening*	Bari	Italy
X	Wall et al.	(2006)	*Arboriculture and Urban Forestry*	~	Australia
X	Janse and Konijnendijk	(2007)	*Urban Forestry and Urban Greening*	~	U.S.A.
X	Nilsson et al.	(2007)	*Urban Forestry and Urban Greening*	~	Europe
X	Rosol	(2010)	*International Journal of Urban and Regional Research*	St. Petersburg	Russia
X	Heintzman	(2010)	*Leisure/Loisir*	Berlin	Germany
–	Huang	(2010)	*Landscape Research*	Ottawa	Canada
O	Jansson and Persson	(2010)	*Urban Forestry and Urban Greening*	Taipei	Taiwan
X	Conway et al.	(2011)	*Landscape and Urban Planning*	~	Sweden
O	Gurung et al.	(2012)	*Small-Scale Forestry*	Ontario	Canada
X	Young	(2011)	*Journal of the American Planning Association*	Lalitpur	Nepal
X	Buizer and Van Herzele	(2012)	*Forest Policy and Economics*	~	U.S.A.
O	Lo and Jim	(2012)	*Land Use Policy*	~	Europe
O	Shan	(2012)	*Urban Forestry and Urban Greening*	Hong Kong	Hong Kong
X	Bendt et al.	(2013)	*Landscape and Urban Planning*	Guangzhou	China

~ Multi-city studies.

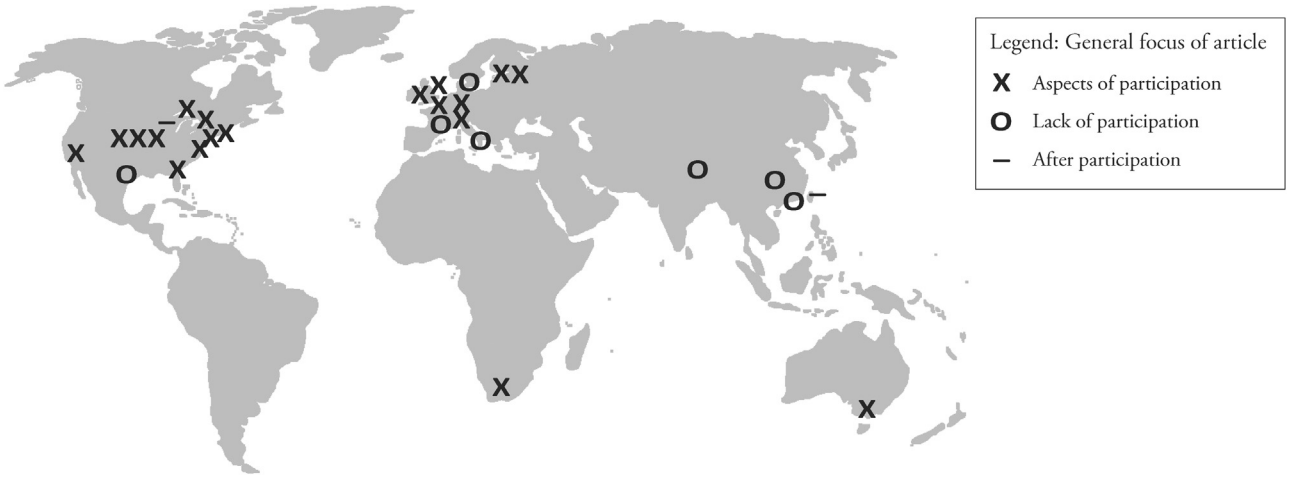

Fig. 3. Map of geographical location of studies performed in the reviewed articles.

Sorting the articles by date and location suggests the topic's popularity beginning in North America 30 years ago, holding dominance there and in Western Europe, then gaining publication popularity over the last 10 years from the Asian countries of Taiwan, Nepal and China (incl. Hong Kong). Despite local context differences, the articles from these four countries all argue for increased citizen participation rather than reviewing participation processes that have actually taken place. Along with one article from Russia (Nilsson et al., 2007), these studies hold the strongest discourse over the ability of participation processes to legitimize government (Huang, 2010; Gurung et al., 2012; Lo and Jim, 2012; Shan, 2012), potentially signalling a growing interest and support for participation while Western focuses move towards critique of ongoing processes.

3.1.2. Aims and general focus of the articles

The articles were found to focus upon participation in three different manners that we categorized as those studying participation processes, those that build a case for potential participation and those that reflect indirectly over cases after participation has been implemented. These three focuses are signified by markers (X, O, –) keyed in Fig. 3 and the accompanying Table 3. Having noted the stated research aim or intent of each article (typically found in an abstract or introduction section), four themes of research aim were found. These are tabulated in Table 4 against the three general focuses discovered, demonstrating the breadth of the research covered by the articles. While most study participation processes that are in place, seven of these articles do not: Kaplan (1980) and Huang (2010) look generally at the perceptions of improved green spaces that included participation and five others build cases to support potential participation (Crompton et al., 1981; Jansson and Persson, 2010; Gurung et al., 2012; Lo and Jim, 2012; Shan, 2012). Common across these seven is a strong position regarding how participation could better local green space administration and perception.

3.2. Types of participation and green space development phase

A range in the scale of green spaces studied was also identified. The spatial scale of the study likely impacts the amount of detail in empirical work; large scale planning studies in particular lacked specific connections between participation outputs and green space quality. The large scale studies of regions or country comparisons also neglected to discuss the green spaces in detail, while articles with city or site-specific cases described green spaces in analytical or descriptive manners.

3.2.1. Types of participation findings

To understand how the different types of participation (see Table 1 for examples) are treated in research across different

Table 4
Central aims of study in reviewed articles, organized by general focus marked as X, O and –. X denotes studying participation processes; O articles build cases for potential participation; and – reflects indirectly over cases after participation has been implemented. Markers X, O, and – can be keyed to Fig. 3 and Table 3 above.

Aim of study	X: Studying Participation Processes	O: Case for Potential Participation	–: Reflect Indirectly After Participation	Totals	Author
Study participation within governance practices (including perception of administrators towards participation).	7	2		*9*	Konijnendijk, Janse and Konijnendijk, Crompton et al., Jones (a), Sipilä and Tyrväinen, Buizer and Van Herzele, Ricard and Bloniarz, Young, Rosol
Study output of participation (including how much influence participants had, physical results, cost savings, perceptions after participation).	9			*9*	Van Herzele, Heintzman, Bloniarz and Ryan, Nannini et al., Conway et al., Nilsson et al., Parkin et al., Bendt et al., Glover et al.
Study motivation and character of participants (or potential participation).	5	1		*6*	Wall et al., Still and Gerhold, Straka et al., Townsend, Shan, Fleming et al.
Study green space perception (relationship between participants and parks).	1	4	2	*7*	Kaplan, Huang, Lo and Jim, Gurung et al., Jansson and Persson, Sanesi and Chiarello, Jones (b)

Table 5
Scale of green space studied vs. type of participation.

Scale of Green space:		Parks, individual cases	Trees, city level	Urban forestry, city level	Urban forestry, state/national level	Green planning, state/national level
Type of participation		*11*	*6*	*6*	*3*	*5*
Civic	*15*	5	1	4	1	4
Physical	*9*	3	5		1	
Both	*7*	3		2	1	1

Table 6
Articles sorted by type of participation vs. phase of green space.

Phase	Type		
	Civic	Physical	Both
Making	11		1
Keeping	4	9	6
Total	15	9	7

spatial scales, articles were tallied and compared according to these parameters (see Table 5). Results indicated that physical participation studies were more likely on the site-specific scales of green spaces, as participating physically implies that users are present in a specific space. This finding was in line with our original assumption. However, this review also found reference to how physical participation is influenced remotely by e.g. national or regional policies and demographic trends (Straka et al., 2005; Wall et al., 2006).

On the other hand, civic participation – which can take place at any spatial scale – was the type most studied. This emphasis on civic participation likely reflects increased governmental and international research priorities concerning participation, but also reinforces the research question of this review, questioning whether specific physical outcomes of participation processes are being analysed.

3.2.2. Green space phase findings

As described in Section 1.2 of this article, both civic and physical participation can be employed in either the making or keeping of a green space. Cross-analysing the review results across phase and participation type finds a fairly balanced overall division of making and keeping, but far more civic participation studies in the making phase (see Table 6).

The articles that included both types of participation were predominantly local studies of friends groups (Jones, 2002a,b) and community gardens (Glover et al., 2005; Rosol, 2010; Bendt et al., 2013) where the green space users have taken on nearly all roles and responsibilities within green space management – acting in the visioning, lobbying, marketing and funding of spaces as well as within daily maintenance.

3.3. Arguments for participation and green space development dimension impacted

To answer the second sub-question of this review, the analysis turned to the rhetoric used to support participation in connection with the green space development dimensions benefited. Given the diversity of the articles, it was not surprising to find an array of support and potential benefits attributed to participation. These arguments (termed "arguments for participation" are listed in full in Table 7) were predominantly found in the introductions and conclusions of the articles, largely discussed through cited literature including a wide body of both academic and governmental reports.

Table 7
Arguments for participation with number of instances discussed and empirically tested.

Argument for participation	Discussed	Empirically tested
Total	**112**	**35**
Making phase	*46*	*16*
Consensus building, settling differences and building community	9	2
Bringing different viewpoints to the surface	1	2
Fostering local knowledge and learning	7	3
Use of existing local knowledge	5	2
Empowerment, increasing people's desire to participate	7	3
Increase number of participants in civic participation	2	0
Increase influence of civic participation	2	3
Resolve lack of trust in government, increase legitimacy	6	0
Better governance processes	7	1
Keeping phase	*66*	*19*
Increased area of green spaces/number of trees	2	0
Higher quality of green spaces	8	0
Increased functionality/suitability to users	7	0
Better appearance of green spaces	4	0
Healthier trees	4	1
Better decisions and more creative solutions	5	2
Better people's perception and satisfaction of the green spaces	4	3
Reduce costs, economical savings through labour and resources	5	1
Better/More effective green space administration	9	3
Increased usage of green spaces	0	4
Boost environmental awareness and human-nature relationships	3	3
Increase attachment and sense of ownership to the projects	6	0
Opportunity for income for impoverished communities	1	0
Improve quality of life	1	0
Enhance technical skills	1	1
More users engage in physical participation	4	0
Increased influence of physical participation	2	1

3.3.1. Identified arguments for participation

This list of arguments include social goals such as consensus and community building, as well as natural science objectives like increased number of trees – demonstrating an interdisciplinary range that would likely require blending quantitative and qualitative research traditions if united for empirical study. The range reemphasizes the many actors and diverse priorities involved in participation processes and the subjectivity of concepts such as *success* and *green space quality*. Many vague expressions were found in the arguments without clear definitions, but in the cases these were operationalized, each defined sub-argument

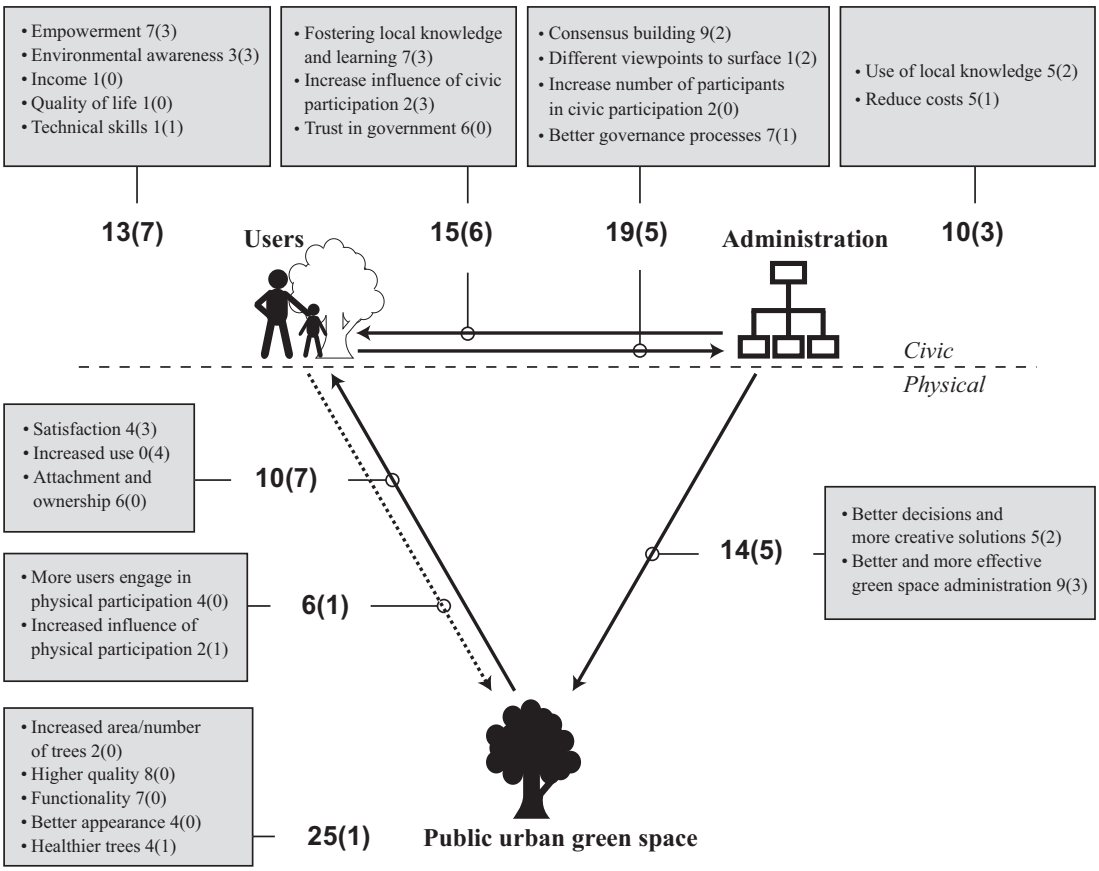

Fig. 4. Arguments for participation by dimension of green space development. Each argument is placed by the dimension of green space development it affects most directly. The numbers reflect how many articles discussed each argument. Numbers in brackets show number of articles that has tested each argument empirically. In argument, a predominance of possible benefits to urban green spaces was discussed in the reviewed literature, while a particularly low number of articles tested direct benefits to urban green spaces empirically. This shows the large disparity between what was tested and what was discussed from the arguments.

appears as a separate line in Table 7. The ambiguous arguments for participation are tallied separately, finding amongst the most common: 'better governance processes', 'better and more effective green space administration', and 'improving green space quality'. All three of these arguments again contain variation regarding actors, priorities, and perspectives.

3.3.2. *Dimension of green space development served*

Each found argument can be understood as primarily serving or impacting one or a combination of the dimensions from the framework (*users*, *administration* or *public urban green space)*. Fig. 4 diagrams and tallies the arguments thus.

Since many of these arguments borrow from different academic traditions (including environmental psychology and political science) and focus on different framework dimensions, the arguments that are directly linked to green spaces were of primary interest in this review. These included 'increased green area', 'increased number of trees', 'improved functionality', and 'healthier trees', all of which are testable, physical aspects which could contribute to an understanding of green space quality. The arguments 'better appearance' and 'higher quality' are again vague and require clear operationalization to be empirically tested.

However, users and administrators may also affect green spaces indirectly, so arguments along the vectors from users and administration were also of interest in their potential to affect physical green space quality. Arguments such as 'better decisions' and 'creative solutions' for example can contribute to physical green space quality and be subjectively assessed. Before and after studies are likely needed to empirically examine 'better and more effective green space administration' and to understand whether 'user satisfaction', 'attachment' and 'ownership' can be attributed to the participation process itself or to the access of a high quality green space, or a mixture of the two. The studies which focused on these aspects did not survey the same users who participated in park up-gradations; they rather made cases for green space attachment and the benefits of up-gradation in general rather than remarking solidly on the participation processes (Kaplan, 1980; Huang, 2010).

3.4. *Empirical evidence linking participation to green space quality*

The third sub-question led the review to compare rhetoric of participation with what was empirically tested in the articles. Of the many arguments for participation discussed in the literature, rather few instances of the arguments being empirically tested were found (see Fig. 4). Table 7 tabulates the number of discussed vs. empirically tested arguments in addition to sorting them by green space phase. An equally large disparity was found in empirically tested arguments from the two phases of green space, and likewise when the arguments were sorted in regard to requiring qualitative or quantitative methods, demonstrating an even and general lack of thorough testing verses rhetoric. Part of this may be attributed to the difficulty of testing very subjective notions, but it also implies that many tenets and benefits of participation are taken for granted. Participation to date remains little tested against physical outputs for green spaces.

In particular, the arguments most directly linked to the green spaces were least tested in regard to number discussed – only the

notion of healthier trees was tested, and that only in one article. Nannini's (1998) study was not only site specific, but also limited to user participation in tree surveying and maintenance work to prevent Dutch Elm disease. The specific nature of the research question allowed a direct, empirical before-and-after study that showed how increased attention and data made possible by user – in this case resident–volunteer participation was successful in increasing the overall health of the trees, stopping the spread of the disease.

Along the vectors pointed towards public urban green space, a few less direct, but tested benefits to green spaces were found. Through considering implemented information from participation practices, Buizer and Van Herzele (2012) and Van Herzele (2004) demonstrated better and more creative solutions in master- and park planning. Bloniarz and Ryan (1996), Nannini et al. (1998), and Conway et al. (2011) found benefits to green space management through users' physical participation. Several articles also demonstrated increased usage after participation processes, often in correlation with increased satisfaction (Kaplan, 1980; Jones, 2002b; Glover et al., 2005; Huang, 2010). These were deemed as indirect or secondary relations to green spaces due to first benefiting the processes or actors over necessarily ensuring physical green space quality. While the finding of increased usage and satisfaction demonstrates user perception of quality or improvement, it could in fact detract from physical quality and result in greater maintenance needs for green spaces due to e.g. intense trampling and increased wear and tear.

3.5. Reflection of research over user participation's contribution to physical green space quality

Several tested and generally supported arguments for using participatory practices can be found which may be indirectly important to physical green space quality. Personal benefits that users get from the act of participating (e.g. Still and Gerhold, 1997; Townsend, 2006; Wall et al., 2006) and those benefits the administration of such processes receives in terms of input and affectivity (e.g. Sipilä and Tyrväinen, 2005; Rosol, 2010; Buizer and Van Herzele, 2012) are not to be overlooked. It may be possible on a case-specific basis to trace the benefits of human actors to the green space along the model and find that, for example, legitimacy in government and strong user voices can lead to better green space administration which in turn improves the physical quality of a green space. However, such connections were rarely detailed empirically in the reviewed literature, and the considerable focus on testing human actor benefits could be worrisome, particularly in the interest of physical green space quality.

Finally, when analysing the results and conclusions sections of the reviewed articles for reasons that specific participation programmes were unsuccessful or suffer, the following reasons were found (number of article mentions in parentheses after each): professional scepticism (8), communication (6), varying personal interest in vegetation (5), commitment (both ways – 5), little government support/tokenism (3), no trust in government (3), uneven levels of activity (1), funding (1), conflicting interests (1) and lacking implementation (1). These demonstrate several contradictions to the general, particularly untested rhetoric found amongst the arguments for participation. Many of the studies about physical participation found that it cannot be relied upon for the long term without the support of municipal administrators because of participant inconsistencies – people lose interest, get busy, or motivation fades after start-up (Jones, 2002b; Young, 2011). While individual interest in participation processes may spike in the short term, meaningful participation for green space maintenance and improvement needs to be long-sighted and consistent (Ibid.).

4. Discussion

The gaps found within the empirical testing leaves the subject open to question, particularly in terms of the physical and environmental outcomes of participation in green spaces. Despite environmental focuses in green space rhetoric throughout sustainable urban planning goals, few studies from this review empirically considered the direct effects of participation upon physical green space quality. The overall range of empirical focus primarily represents inconsistency – confirming a general dis-census of intentions, goals and outputs of participation.

In terms of more subjectively assessed quality, improvements in user perception of green spaces were represented and tested in several articles. The act of participating in decision making can lead to physical outcomes better reflecting user preferences, though simply being involved may also lead to increased satisfaction – therefore satisfaction is not necessarily linked to improvements to the green space. Furthermore, other acts of updating, rehabilitating, or improving a space, not connected to participation, can result in increased satisfaction, so proof of participation's specific role remains somewhat at large.

Regardless of one's definition of green space quality, the inconsistencies represented in the research provide little evidence to combat scepticism towards participation in green space development. Many professionals are in disagreement over the benefits of participation, how to implement it, and how to make it effective. Research shows that administrative actors are hesitating to involve users in green space management due to worries about the impact of such processes on the quality of the green spaces (Molin and Konijnendijk van den Bosch, 2014). Further, research on local participation efforts often points to a relationship between participation processes and output in terms of retaining members, due to participants being motivated by the perception of the physical outcomes of their efforts (Rydin and Pennington, 2000; Speller and Ravenscroft, 2005; Young, 2011). However, without an understanding of how participation might directly affect physical green space quality, debates continue. Empirical research can evaluate and test rhetorical premises of participation against contextual and case-based outcomes – but researchers must be cautious of which aspects of participation are taken for granted.

4.1. Prior assumptions vs. review study findings

A number of assumptions were overturned and confirmed during this review. Under sub-question A, the initial assumption was that physical participation may be the most clearly and directly traceable type to physical green space quality. Civic participation was not overlooked and the surprising majority of articles handling it, not only guided its inclusion for analysis, but also reemphasized a focus on process rather than green space quality outputs. Several benefits that influence green spaces indirectly were demonstrated, but the empirical studies were dominated by user or administrator benefits from participation. This is likely influenced by long-running research traditions behind governance that link participation to human benefits with scholars such as Elinor Ostrom and Patsy Healy (Smith et al., 2014) having built upon Arnstein's (1969) work. The process-focus further likely reflects upon available research funding, stemming from process-focused national policies. Such policies, for example Local Agenda 21 plans which are derived from the Agenda 21 Action Plan drawn up by the United Nations Conference on Environment and Development (UNCED, 1992), promote strategic user inclusion in environmental planning processes, but remain open to critique regarding influence on plan content or end products (Selman, 1998).

In line with this lack of concrete output focus in participation, theoretical concepts such as Collaborative Planning (Healey, 1997)

and Network Governance (Hajer and Wagenaar, 2003) have largely guided western urban planning in research and practice over the past decades (Sehested, 2009). These too reinforce a priority on process and governance, often over process outputs – the actualities of which are sometimes quite distant from theoretical intentions (Fainstein, 2009). Despite critique, these international, process-focused mind-sets support the high number of articles focused upon civic participation particularly in the making phase of green spaces and the lack of articles representing physical participation in this phase. The research overlooked physical, making participation – users building green spaces for example.

The articles from this review that did focus on physical participation and physical outputs often related to green space management, which is a field where technocratic, instrumental, and expert dominated approaches traditionally have prevailed (de Magalhães and Carmona, 2008; Randrup and Persson, 2009; Sehested, 2009; Dempsey and Burton, 2012). Physical participation-oriented articles often followed a discourse of local governments employing particularly voluntary, physical participation to streamline resource use. Further, bureaucracy, inefficiency, and stress on public budgets often push local governments to distribute more responsibility to local communities. This is evident in countries taking precedent from England, for example, where the conservative government's 'Big Society Manifesto' points at increased localism in budget allocation between public services such as libraries, street cleaning and green spaces (Kisby, 2010). When money is not allocated for green space maintenance staff, local authorities are forced to seek external and community partnerships as a way to sustain service delivery (Mathers et al., 2011). In this review, Young (2011) also studied funding issues across different types of tree planting initiatives, finding underfunded grassroots projects that work in the short term, but inconsistency in the ability to sustain them without municipal funding and effort.

4.1.1. Impacts to green spaces rarely empirically tested

Sub-question B questioned if arguments for participation actually serve green spaces. Tabulating the different arguments for participation demonstrated how few of the arguments directly impact green spaces. Instead, the aspects of participation benefiting user and administrative actors align with a traditional human-centric and government-down approach to green space administration. Review results show that participation in urban green space development is still being considered as going from users, through an administrative body and then being implemented at the green space, rather than directly from users to green space.

Many of the physical participation processes evaluated did look at programmes where users have a direct influence over the green space – in planting or monitoring vegetation for example. Success of some of these programmes was attributed to the relationship between participants and the administrators of the participation processes. Many articles noted that user participation alone cannot sustain itself, reminiscent of Swyngedouw's (2005) and others' critiques of the Neoliberal tendency to shift responsibility from governmental actors to civil society and the private sector. Questions follow from this regarding who represents the long-term user needs in green spaces, who safeguards public interest, and who regulates the careful balance between urban use and environmental values (Ibid.).

Although research over physical participation practices was limited in the reviewed studies, more case-specific studies have been extensively described in 'grey' literature (e.g. Dunnett et al., 2002; Van Herzele and Denutte, 2003; Van Herzele et al., 2005a; CABE, 2010; Center for Park og Natur, 2010; Mathers et al., 2011). These more 'hands on' and local studies are often commissioned by local or national government bodies. While these reports are of great value for the field and cover the context-dependent nature of most problems, they pose a challenge to knowledge sharing due to their limited distribution and lack of peer review. Additionally, the idea of being physically engaged in urban green spaces is in line with popular trends such as Guerrilla Gardening (e.g. Tracey, 2007) and Urban Agriculture (e.g. Bhatt et al., 2008), which are typically user-based activities performed without formal mandate, leaving them potentially less researched than more formalized processes.

4.1.2. Need for case-specific, holistic empirical studies

Answering research sub-question C demonstrated a surprising amount of rhetoric about participation being employed by researchers with little clear questioning or empirical support. The review began with a question over whether participation outputs are tested directly in regard to physical green space quality, but the findings showed a generally low percentage of testing of participation outcomes benefiting users and administration as well. This trend can be related to broadly accepted understandings of participation's purposes, implementations, and end goals that have also plagued fields like communicative planning for many years (Fainstein, 2009). Empirical studies could take a more active role in clarifying misconceptions and testing mechanisms that might relate or defeat generalizations within specific contexts, better informing how participation implementations in different development phases can most effectively better green spaces.

The generalizations of this review are likely connected to the considerable number of large scale (city, state, national) studies which are simply too large in scope to evaluate place-specific results. The gap in scientific knowledge calls for a re-focus of research to the case level in order to approach a better understanding of the specific green space quality outcomes of user participation. Research could focus upon what civic and physical participation processes contribute to physical green space quality and how they most effectively can be employed. A new generation of research could clarify much of the debate found here.

4.2. Methodological reflections

In this study, an adaption to Randrup and Persson's (2009) park-organisation-user model served as analytical framework to structure the literature review around dimensions of green space development. In the literature, only two arguments for participation were found that supported part of the model's adaptation – namely the vector added to directly link *users* to *public urban green spaces*. Articles focusing on physical participation link the users to green spaces in action, but the potential benefits of participation along that vector remain little explored. Otherwise, the framework allowed a holistic approach to considering green space administration and could methodologically serve further research. It was particularly useful in the illustration of gaps and biases considering the different dimensions and their potential direct and indirect interactions. In Fig. 5, the diagram is used to illustrate the demonstrated need for additional research focus from human actors to the green spaces.

4.2.1. Limitations of this review

This study, with the intent of getting an overview of the research field, benefited from the search being initially unrestricted in terms of participation types and spatial scale of study. However, this open process led to broad ranges in results which could be problematic for more specific research questions. In terms of a review and the field of research, the body of excluded research remains substantial and is open to future review studies with different green spaces in focus – national parks or community gardens for example. The urban focus of this review disregarded studies about user participation in the fields of natural resource management, nature conservation, non-urban forest planning which

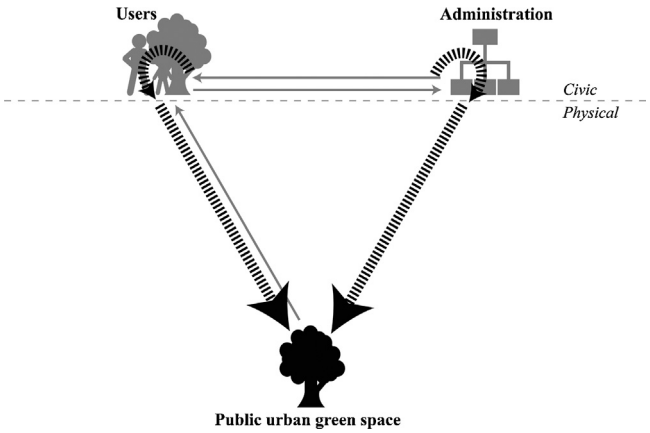

Fig. 5. Analytical framework illustrating potential focuses to cover the gap in knowledge found in this article. Direct and indirect connections and their potentials are represented here with vectors.

could likewise be branches for further study and cross-comparison. Studies from these broader fields are likely to demonstrate even more approaches to, applications and goals of participation. The review's focus on articles written in English may have affected the geographic distribution of found participation cases with a predominance of studies performed in North America.

5. Conclusions

This review focused on peer reviewed research over participation in public urban green spaces, and found that the empirical work to date has primarily focused on benefits to users and administrators rather than physical outputs of participation. The overall focus on the administrative and process-oriented aspects of participation was found to overshadow research's potential to critique and understand the physical outcomes of participation in public urban green space development. A great deal of vague rhetoric about wide-ranging benefits of participation was found to be employed without empirically testing against reality in specific contexts.

In particular, this review found very little empirical evidence of direct links between participation and the physical quality of green spaces, i.e. how the green space performs environmentally and meets local needs for use. Importantly, the impact on physical green space quality from user participation in maintenance tasks remains hopeful but little tested across the reviewed studies. User participation activities should be developed and tested against the practical needs of green space development in order to improve physical green space quality. A prerequisite for such empirical testing is a clear definition of green space quality, adjustable to suit each individual place, to determine what features of the green space that should be assessed as well as whether subjective and/or objective assessments should be carried out. Reflective research could then contribute to proving where the actual benefits of participation lie in practice, and how participation processes can be most meaningful. In this manner, research could better inform administrators in what to realistically expect from participation exercised in different points of green space development.

While it is implicitly agreed that participation is good and capable of improving green spaces, more proof is needed to understand the mechanisms by which participation affects physical green space quality. Most studies to date have been process-driven rather than product-driven, despite drawing upon an abundance of green space quality rhetoric. While participatory processes are widely demonstrated to improve civic relationships and trust in government, little research empirically connects those processes to physical outcomes. Without a body of empirical evidence linking participation to green space quality, neoliberalism critique and professionals' scepticism can continue without response. Despite agreement over the great importance of providing high quality green spaces in urban areas, it remains unclear whether participation actually improves parks, or if it is exercised just for the benefit of the people involved?

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