



# Co-production, co-creation or co-design of public space? A systematic review

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## ABSTRACT

Public space is increasingly provided and managed by a variety of actors. In order to describe this phenomenon, several concepts have been used, such as co-production, co-creation and co-design. This paper reviews the existing literature on public space and reveals that these concepts are defined similarly and used interchangeably. Based on a systematic literature review, and aided by bibliometric analysis, the paper attempts to establish transparency regarding current understanding and use of the concepts. By discussing the differences, the paper aims to reduce the ambiguity and increase the clarity of the concepts. The paper concludes by suggesting in which case it would be more appropriate to use which concept.

## 1. Introduction

Multi-stakeholder collaboration in providing and managing public space has been widely reported both in existing literature and practice. On a continuum with gradual differences between the two extreme poles, i.e., fully public and fully private, there are public spaces with a hybrid character (Sylke, 2008). Examples include privately owned public spaces where private owners provide publicly accessible and usable spaces due to a legal arrangement with the public sector (Kayden et al., 2000; Lee & Scholten, 2022, 2024). Publicly owned public spaces like conservancies (Murray, 2010) and business improvement districts (Houstoun, 2003; Hoyt & Gopal-Agge, 2007) involve non-municipal actors as well, since non-profit organizations take responsibility for their management. Similarly, a recent study by Lee (2023) reveals that a 14-hectare public park in Berlin engages over 60 actors from different sectors (i.e., the public, private and non-profit sectors) and levels (i.e., district, city and federal levels) for its management. These are not exceptional cases. Several concepts have been used to describe such a phenomenon, including co-production, co-creation and co-design of public space.

In this study, we compare these three co-concepts – co-production, co-creation, and co-design – to address the issue of “cobiquity – an apparent appetite for participatory research practice and increased

emphasis on partnership working, in combination with the related emergence of a plethora of ‘co’ words, promoting a conflation of meanings and practices from different collaborative traditions” (Williams et al., 2020, 2). Indeed, there has been a debate on 1) how co-concepts differ from other forms of collaboration; and 2) how co-concepts can be distinguished from one another. Scholars such as Watson (2014) have dealt with the former issue to differentiate co-production from participation. While this issue is equally important, this paper focuses on the latter issue to address the conceptual contention of co-concepts. Interestingly, the three co-concepts to be studied in this paper have different origins. The term ‘co-production’ was coined by Elinor Ostrom and her colleagues in the 1970s to refer to the involvement of citizens in the production of public services. Co-creation has its roots in marketing and business literature. It describes the joint development of products, services, and experiences with customers to achieve mutually beneficial innovation outcomes (Prahalad & Ramaswamy, 2000). Co-design has its own distinct disciplinary origin which goes back to the participatory design movement in Scandinavia in the 1970s (Robert et al., 2021).

Co-concepts are used in a variety of academic fields ranging from environment-related sciences to science technology studies (STS) (see Jasanoff, 2004; Ruess et al., 2023).<sup>1</sup> There are a few studies in the field of public health and public administration that analyze the relationship

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<sup>1</sup> Note that the definition of co-concepts can vary across disciplines. For instance, in STS literature, co-production refers to the realities of human experience that “emerge(s) as the joint achievements of scientific, technical, and social enterprise (...) each underwriting the other's existence” (Jasanoff, 2004, p 17) – which is different to how other sources, e.g. public space literature, understand co-production.

between co-concepts. For example, Masterson et al. (2022) conducted a systematic scoping review in health and social care and suggested that there is a level of uncertainty as to which of the co-concepts (in this case 'co-production' and 'co-design') is relevant to which specific context. Also, Voorberg et al. (2015) performed a systematic review of public administration literature and found that co-production and co-creation are defined similarly. While they suggest reserving co-creation for an initial phase of service provision and co-production for implementation, they call for further research that offers conceptual clarity between co-production, co-creation and related concepts.

The concept of 'co-production' has gained much popularity in the planning field in the last decade (Lee et al., 2024). As will be illustrated in the following section, co-production, co-creation, and co-design are popular in public space-related studies. Yet limited attempts have been made to establish clear differences between these terms. Instead of examining the meanings of the three co-concepts from the perspective of their various origins, this study derives the meanings from their use in the public space literature. The main research question is whether and how the three co-concepts, differ from one another with regard to public space. To this end, the paper aims to: 1) establish transparency regarding the current understanding and use of the concepts; 2) identify the differences among the concepts; and 3) suggest in which case it would be more appropriate to use which concept. We use the Co-7D-framework (Lee et al., 2024) which was developed as a result of an analysis of 142 definitions of co-production in the planning literature. The framework was chosen as it allows for a systematic comparison among different concepts. The remainder of this article is organized as follows: The next section outlines the methods adopted to conduct the bibliometric analysis, systematic literature review, and comparative analysis. The third, fourth, and fifth sections present the findings of the analysis. The last section summarizes the results.

## 2. Material and methods

The process of sample selection for this study involved eight steps (see Fig. 1). The datasets for this study were retrieved from the Web of Science (WoS) and Scopus. These databases were chosen due to the high-quality indexing and accuracy in their journal classification and research area categorization (Wang & Waltman, 2016). They are also considered to have fewer searching and indexing errors than other databases like Google Scholar (Shahab, 2022). The commonly known limitation in terms of language coverage was less relevant as only English-language publications were selected.

We conducted a 'Topic Search' within WoS (i.e., search terms in title, abstract, author keywords, and keywords plus); in the case of Scopus, we used an 'Article Title, Abstract, Keywords Search'. The search term yielded a total of 79 and 206 items in WoS and Scopus respectively. Then, the scope of investigation was limited based on the type of publication, language, and year of publication. We selected peer-reviewed journal articles in English only for the purpose of traceability and manual coding. As the search took place in March 2023, we decided to analyze articles published until 2022. After filtering manually to exclude articles that had not met the inclusion criteria ( $n = 9$ ) or had been inaccessible ( $n = 1$ ), we merged articles found in WoS and Scopus. As a result, we found 115 articles, which we further screened based on their relevance. The relevance check was necessary as there were articles that included the search terms but had nothing to do with co-production, co-creation or co-design of public spaces. As an example, we dropped an article on co-production of identities and the role of public space (Chinouya & Aspinal, 2010). This reduced the total number of items to 73, which we used for the bibliometric analysis. For the systematic literature review and comparative analysis, we checked the availability of definitions of co-production, co-creation or co-design in 73 articles. This resulted in 48 definitions in 43 articles.

This research involves bibliometric analysis, systematic literature review, and comparative analysis in order to meet the three research

aims mentioned in the introduction. By using bibliometric data, we first identified the evolution of publication activity. Furthermore, we examined the current use of concepts in the existing literature. In addition to the bibliometric analysis, we conducted a systematic literature review to find out how each term has been defined in the existing literature. Definitions were taken from the introduction, if possible, and coded based on the Co-7D-framework. This framework includes seven dimensions that allow us to identify nuanced differences and similarities in the use of co-concepts in the scholarly literature. The seven dimensions are: actor (who is involved? who takes the lead?), reason (motivation to become engaged in co-production), input (resources used), output (results of co-production), phase (time and periodization), means (such as contracting or partnership), and context (i.e., wider social and/or geographical environment). The dimensions were deduced from the scholarly literature. Although the dimensions and sub-dimensions are most relevant to co-production, precisely for this reason, the framework allows for comparing co-production with other similar concepts. As written definitions can be rather narrow operationalizations of the understanding of a concept, we considered both the most relevant sentence and the neighboring text. To increase the reliability, every definition was coded by at least two coders. If there was a disagreement, it was discussed with the third coder. The results of the analysis were compared in order to find out whether and how the three terms differ from one another. Lastly, we carried out a word frequency check and compared the results; this allowed for a better interpretation of the results of the research.

## 3. Findings of the bibliometric analysis

This section begins by looking into the evolution of publication activity. It will then present the results of our examination of the current use of the concepts in the existing literature. Based on the availability of bibliometric data, we selected four factors that might influence the use of the concept – these are journal, topic, strand of literature, and the country in which authors are based.

### 3.1. Evolution of publication activity

The 73 relevant articles between 2012 and 2022 identified from our search are summarized in Fig. 2. As shown in the figure, the very first study was published in 2012. The year 2012 seems to be meaningful as it is also a year from which planning literature on co-production exploded (see Lee et al., 2024). Although the first study was published in 2012, the development stagnated until 2018. From 2019, there was a significant increase in the number of articles; this indicates an increased attention to this field. Along with the popularity of those concepts in the field of public space; however, their ambiguity has increased as well. This is evidenced by the fact that 30 out of 73 articles (41 %) did not define the concept(s) used in the article at all. For instance, the article in 2012 mentions the concept 'co-creation' in the abstract and keywords but does not provide the definition. The first time co-creation is defined in this field is in another article in 2016. Co-production and co-design are first defined in 2013 and 2016 respectively. There may be at least two possible reasons why the notions were defined late or not defined at all – either because authors find them self-evident or because there is a lack of common knowledge.

### 3.2. Current use of the concepts

One of the research aims is to find out when authors use the concept 'co-production', 'co-creation' or 'co-design'. We selected four factors based on the availability of bibliometric data and examined whether there was any link between these factors and the use of the concepts. First, journals where the examined articles were published were analyzed to find out whether a certain journal was likely to publish articles on a certain concept. As the analysis reveals, there are altogether

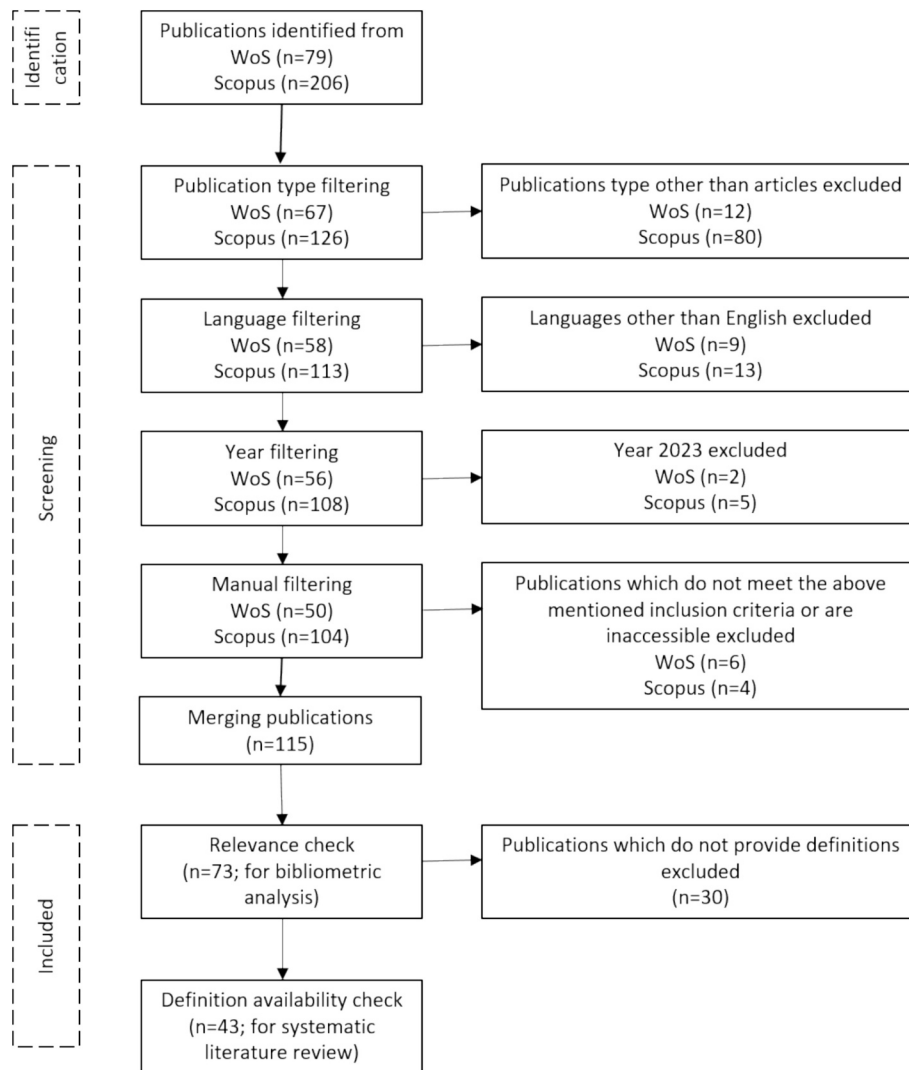


Fig. 1. Approach to the literature search (as of March 9, 2023).

63 journals that have published 73 articles. Only seven journals have published more than one article. The top two journals in terms of the number of articles published are *Urban Planning* ( $n = 4$ ) and *Cities* ( $n = 3$ ). Both journals have covered all three concepts. While it is interesting to find out that diverse journals publish articles on co-production, co-creation and/or co-design of public space, we did not identify any clear pattern.

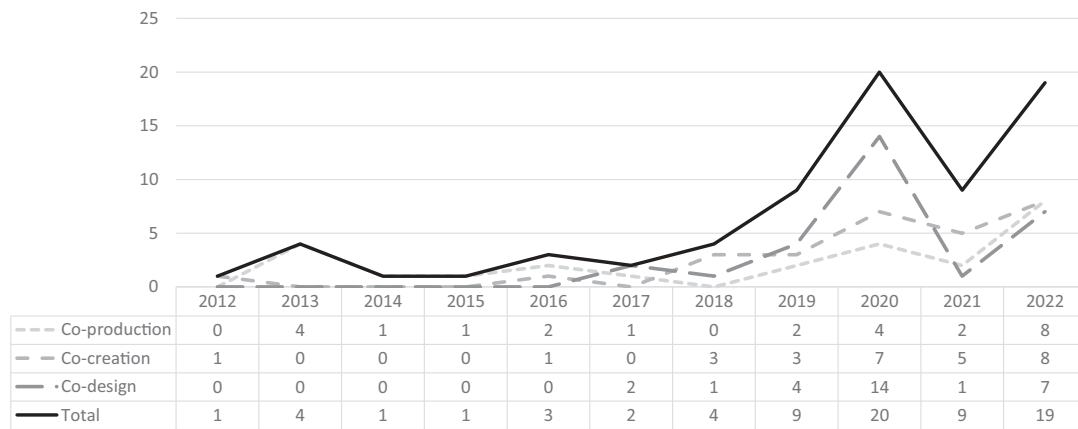
In addition to the journal, we examined whether a certain concept tended to be related to a certain topic. We identified a number of topics from 73 articles based on the title, abstract and keyword and studied the possible relationship. We found that digitalization in relation to public space uses co-creation and co-design more often than co-production. The same goes for design as a topic – the two concepts ‘co-creation’ and ‘co-design’ are more often used than ‘co-production’.

Moreover, based on the citation, we examined whether a strand of literature played a role in the use of a particular concept. The idea is that authors refer to the concept that is most cited in the literature. For this, we analyzed the references in the definitions. We found that co-production definitions often refer to the work by [Ostrom \(1996\)](#). Like the one by Ostrom, other references that are cited more than once are several decades old ([Lefebvre, 1974](#); [Whitaker, 1980](#)) except for the work by [Van Melik and Van der Krabben \(2016\)](#). For co-creation and co-design, such a shared reference seems to be missing. The only one mentioned more than once is [Sanders & Stappers, 2008](#), which is from

the field of design and arts. It is used in both co-creation and co-design definitions.

The country of authors' affiliations as indicated in the publications was examined in order to study geographic aspects of concept use. The results reveal that three concepts are widely used in the academic community all over the world such as in Belgium, India and Australia. Yet most authors are affiliated with European research institutions. Among the 73 articles, 60 have at least one author based in Europe at the time of publication. These authors are based in 21 European countries. Among 60 articles that involve authors in Europe, co-production appears in 28 articles and co-creation and co-design in 34 articles. Interestingly, Italy, with 14 articles having at least one author affiliated with a European institution, is the leading country in terms of the number of articles in this field. Given that we considered publications in English only, this is a remarkable finding. What is also striking is the fact that all 14 articles used the concept ‘co-design’, partly in combination with co-creation (eight times) or co-production (six times). This suggests that the concept ‘co-design’ is particularly popular in Italy, which might influence authors affiliated there. Co-design is also the most popular concept in Asia with four out of five authors using it.

In addition, we examined the location of case studies. The majority of articles (70 out of 73) take a case study approach, either having a single case or comparing up to 10 cases. Altogether 183 case studies (mostly on the city level) were identified. Worldwide, every continent is



**Fig. 2.** Evolution of publication activity.  
 Note: number of articles that mention each concept in title, abstract or keyword.

represented, for instance, Asia has 19 case studies from eight different countries, and North America has 14 case studies in two countries. As the geographical distribution (see Figs. 3 and 4) shows, more than half of the case studies are located in Europe and found in 45 articles. Interestingly, 12 articles covering 42 case studies across the world are the outcome of three research projects funded by the EU Horizon 2020 or European Urban Initiative according to acknowledgments given by the authors (see Fig. 4). Among others, Lisbon, Vilnius, Bologna, Milan and Ghent are especially popular as cities with case studies. The concept ‘co-creation’ is used most for European case studies. One reason might be that the European Innovation Policy picked up the concept and thereby contributed to its proliferation in Europe (Cardullo & Kitchin, 2019). Nine out of 12 articles receiving EU funding use co-creation as their main research concept, yet only five define the term. The other three articles use co-design as a main research concept and yet, only one of

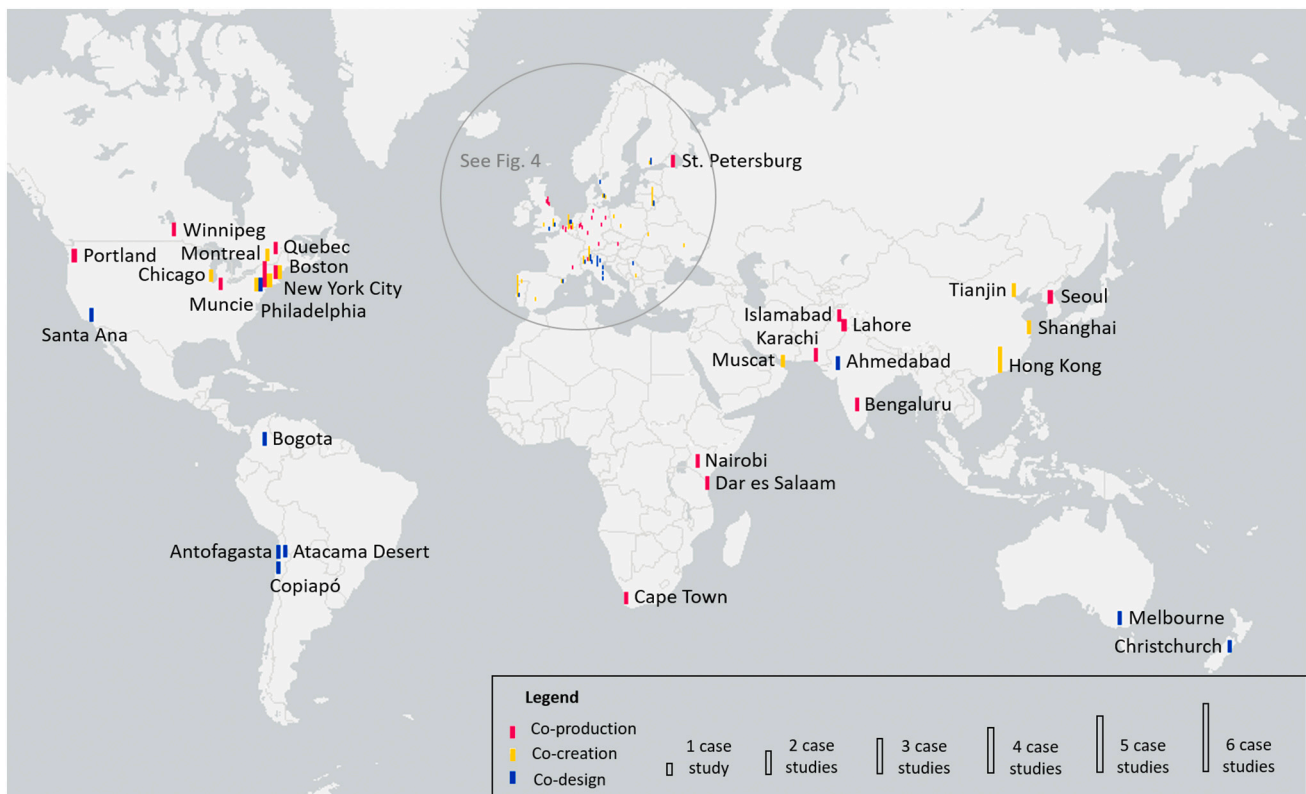
them define the term. Thus, despite the increased research activities, clarity on the concepts is not enhanced.

#### 4. Findings of the systematic literature review

The Co-7D-framework (Lee et al., 2024) includes seven dimensions and 51 sub-dimensions (see Tables 1–6 and Fig. 5). This framework was used to analyze definitions of co-production, co-creation and co-design of public space. We present the findings of our analysis and discuss how the three co-concepts differ from one another.

##### 4.1. Actor

The first dimension, ‘actor’, refers to those who are involved in co-production, co-creation or co-design. It is characterized by a wide



**Fig. 3.** Geographical distribution of case studies.



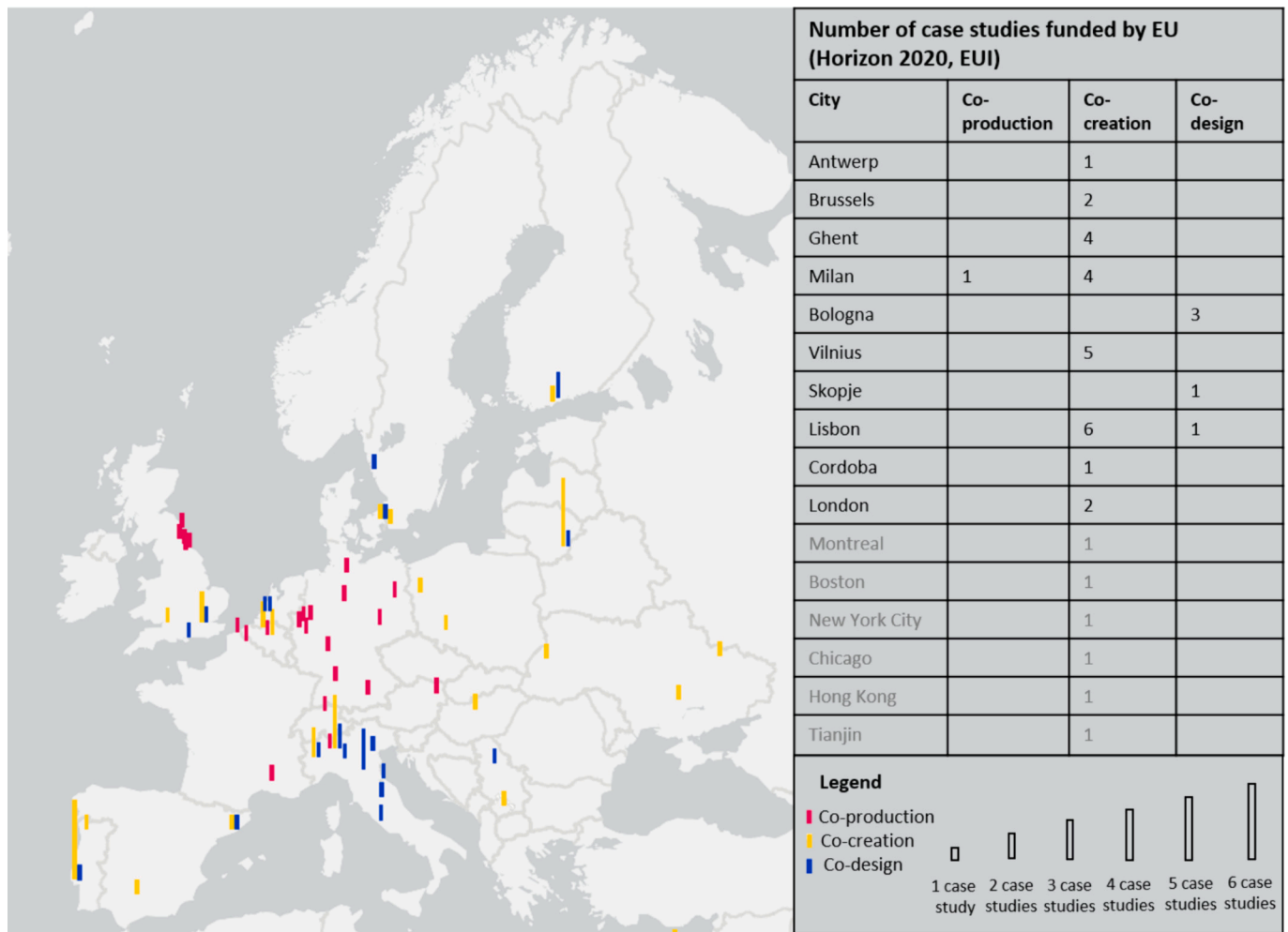


Fig. 4. Case studies of co-creation, co-design or co-production in Europe.

range of sub-dimensions ranging from individuals (i.e., *individual citizens, users/consumers/clients, professionals*) to representatives of an organization or a group (i.e., *public sector, private sector, service providers, civil society*) (see Table 1). *Professionals* work in different institutions such as public administration or universities and have different kinds of expertise. *Service providers* could either be public, semi-public or private institutions. *Civil society* includes organized citizen groups such as associations and grassroots initiatives as well as non-governmental organizations. Although an actor might have several possible attributions, the coding was done based on the role highlighted in the definitions. A high percentage of definitions include ‘actor’. Indeed, out of 48 definitions, 38 include actors (79 %); within those definitions, there are 79 codings. This dimension appears in definitions of three concepts with a similar frequency. The fact that 79 codings exist in 38 definitions suggests that several types of actors are mentioned simultaneously. This is especially the case with co-production definitions. Out of 17 definitions that have the actor element, 10 mention more than two types of actors.

The research reveals that the two most prevalent sub-dimensions are *individual citizens* and *unspecified*, while the least popular one is *service providers*. Over 70 % and 40 % of definitions of co-production and co-design respectively highlight the involvement of *individual citizens*. In the case of co-creation, *users/consumers/clients* were often found as actors. This may be due to the fact that the concept has its origin in the marketing and business literature that describes co-creation as the joint development of products, services, and experiences involving users (Ruess et al., 2023). While existing studies reveal the engagement of the *private sector* in the provision and management of public spaces,

surprisingly, this type of actor was only found in co-production definitions. In the case of co-creation, *service providers* is only mentioned once here and not anywhere else. What is also remarkable is a narrower range of actors in co-design definitions since they do not mention four types of actors at all. Rather, they encompass different types of actors as evidenced by the high percentage of the sub-dimension *unspecified*. It is also interesting to note that *professionals* in co-design definitions are always designers. Actors who do not belong to any other sub-dimensions but *others* include homeless and disabled people. They are mentioned in relation to their different needs regarding the design and management of public spaces.

#### 4.2. Reason

The dimension ‘reason’ refers to justifications for why co-production, co-creation or co-design take place. Reasons can be rather general (e.g. *to address needs, to solve problems*) or specific as they relate to goods and services (e.g. *to improve efficiency, to improve quantity/quality*). Some reasons are normative with underlying criticism (e.g. *to distribute power, to create social benefits*) (see Table 2). Reasons appear occasionally in definitions. Out of 48 definitions, 19 include reasons (40 %); within those definitions, there are 59 codings. Reasons are less frequently mentioned in co-design definitions (29 %) than in definitions of co-production (40 %) and co-creation (50 %). The fact that 59 codings exist in 19 definitions suggests that several types of reasons are mentioned simultaneously. This is especially true for co-creation definitions. Out of nine definitions that have a reason element, four mention

**Table 1**  
Coding result on ‘actor’.

Sub-dimension	Example	Co-production n (%)	Co-creation n (%)	Co-design n (%)	Total number of codings (for each actor) n (%)
Individual citizens	"citizens" (e.g., Caneparo & Bonavero 2016)	12 (71%)	5 (38%)	5 (42%)	22 (58%)
Users/consumers/clients	"users" (e.g., Caneparo & Bonavero 2016)	1 (6%)	5 (38%)	4 (33%)	10 (26%)
Professionals	"designer" (e.g., Yang et al. 2021), "experts" (Opromolla et al. 2019)	2 (12%)	2 (15%)	3 (25%)	7 (18%)
Public sector	"public sector" (e.g., Stuchi et al. 2022)	3 (18%)	2 (15%)	0 (0%)	5 (13%)
Private sector	"the market" (e.g., Van Melik & Van der Krabben 2016), "project developers" (Pugalis 2013)	5 (29%)	0 (0%)	0 (0%)	5 (13%)
Service providers	"providers" (Foster 2022)	0 (0%)	1 (8%)	0 (0%)	1 (3%)
Civil society	"civil society" (e.g., Van Melik & Van der Krabben 2016); "Grassroots initiatives" (Brazeau-Beliveau & Cloutier 2021)	6 (35%)	3 (23%)	0 (0%)	9 (24%)
Unspecified	"people" (e.g., Mintrom et al. 2022), "stakeholders" (e.g., Torabi et al. 2020)	6 (35%)	7 (54%)	5 (42%)	18 (47%)
Others	"people experiencing homelessness" (Roberts & Archer 2022), "both able bodied and people with different levels and types of disabilities" (Barbi et al. 2020)	1 (6%)	0 (0%)	1 (8%)	3 (8%)
Total number of codings (for each concept)		36	25	18	79
Total number of definitions with dimension ‘actors’		17 (out of 20)	13 (out of 14)	12 (out of 14)	38 (out of 48)

Note: n = number of codings; % = percentage of codings in relation to the total number of definitions with dimension ‘actor’; the most frequently mentioned sub-dimension is highlighted.

more than two types of reasons.

Strikingly, the sub-dimension *others* is the most popular one in all three concepts. Although this dimension has a high number of sub-dimensions and, therefore covers a wide range of reasons, the majority of definitions still include reasons that are new to the framework. Examples include “to achieve a common goal” (De Filippi et al., 2020b, 136) and “to spark transformation” (Maciuliene, 2018, 3). This highlights how diverse the reasons of co-production, co-creation and co-design of public space could be. What is also remarkable is the large gap in terms of frequency across the three concepts. In particular, the sub-dimensions *to solve problem* and *to promote engagement* show the greatest difference, i.e., between 0 % and 44 %. Indeed, *to solve problem* is most relevant to co-creation, while *to promote engagement* is most relevant to co-production. Like the sub-dimension *to promote engagement*, *to react to austerity* as a reason is only mentioned in co-production definitions.

#### 4.3. Input

The dimension ‘input’ describes what is needed to co-produce, co-create or co-design. It has various types that are immaterial and they are closely linked to one another (see Table 3). The sub-dimension *knowledge/expertise* includes different kinds of knowledge; *experience from*

*different practices* highlights practical experiences; and *perspective* includes interpretations and opinions. Input appears seldom in definitions. Out of 48 definitions, 11 include input (23 %); within those definitions, there are 18 codings. This dimension appears in definitions of three concepts at a similar frequency.

The majority of inputs identified in definitions do not belong to the existing sub-dimensions and, hence are put into *others*. Interestingly, the sub-dimension *others* is related to a creative process as it includes ideas, talent, and collective creativity. Indeed, all co-creation definitions with an input element refer to inputs other than but partly in combination with the three above-mentioned sub-dimensions. Another interesting input that belongs to *others* is costs. Indeed, financial contribution is explicitly mentioned in co-production definitions due to the definition by Van Melik and Van der Krabben (2016). Unlike the case of co-production and co-creation, *knowledge/expertise* is the most frequent input when it comes to co-design. What is also noticeable is that co-creation is the only concept whose definitions cover all types of inputs.

#### 4.4. Output

The dimension ‘output’ describes what is co-produced, co-created or co-designed. It has various types from *public good* to *public service*, and *value* (see Table 4). Output appears often in definitions, certainly more

**Table 2**  
Coding result on 'reason'.

Sub-dimension	Example	Co-production (%)	Co-creation (%)	Co-design (%)	Total number of codings (for each reason) (%)
To address needs	"enabling better adaptation to social needs" (Stuchi et al. 2022), "based on real needs" (Barbi et al. 2020)	2 (22 %)	2 (22%)	4 (40%)	8 (42%)
To solve problem	"problem-solving" (Foster 2022), "intending to solve a problem" (Yang et al. 2021)	0 (0%)	4 (44%)	1 (10%)	5 (26%)
To create social benefits	"social sustainability" (Book & Högdahl 2022), "as introduced as a strategy to promote the Politique de la Ville's aim of social development" (Wilkie & Michialino 2014)	1 (11%)	2 (22%)	5 (42%)	8 (42%)
To create better outcome	"aiming to improve the outcomes" (Cruz et al. 2022b)	0 (0%)	0 (0%)	1 (10%)	1 (5%)
To react to austerity	"budgetary constraints" (Bortolotti 2021)	2 (22%)	0 (0%)	0 (0%)	2 (11%)
To improve efficiency	"to save time" (Bortolotti 2021), "reducing costs and the risk of failure" (Stuchi et al. 2022)	2 (22%)	2 (22%)	0 (0%)	4 (21%)
To improve quality & quantity	"improving public service quality" (Gazley et al. 2020), "increasing user satisfaction" (Stuchi et al. 2022)	2 (22%)	1 (11%)	1 (10%)	4 (21%)
To improve knowledge production	"creative process of collaborative learning" (Foster 2022), "to integrate the best available knowledge" (Torabi et al. 2020)	1 (11%)	1 (11%)	2 (20%)	4 (21%)
To distribute power	"redefine unequal power relations" (Roberts & Archer 2022), "based on concept of 'radical democracy'" (Wu et al. 2022)	1 (11%)	0 (0%)	1 (19%)	2 (11%)
To promote engagement	"offering a mechanism for citizen voice and civic engagement" (Gazley et al. 2020)	4 (44%)	0 (0%)	0 (0%)	4 (21%)
To gain democratic legitimacy	"a desire for increased democratisation" (Book & Högdahl 2022), "legitimate" (Cruz et al. 2022a)	1 (11%)	1 (11%)	1 (10%)	3 (16%)
Others	"to achieve a common goal" (De Filippi et al. 2020b), "to spark transformations in public spaces" (Maciuliene 2018), "to optimise children's learning experiences" (Pesch et al. 2022)	8 (89%)	6 (67%)	5 (50%)	19 (100%)
Total number of codings (for each concept)		24	19	16	59
Total number of definitions with dimension 'reason'		8 (out of 20)	7 (out of 14)	4 (out of 14)	19 (out of 48)

Note: n = number of codings; % = percentage of codings in relation to the total number of definitions with dimension 'reason'; the most frequently mentioned sub-dimension is highlighted.

frequently than inputs. Out of 48 definitions, 30 include output (63 %); within those definitions, there are 42 codings. This dimension appears far more frequently in definitions of co-production (80 %) and co-creation (79 %) than co-design (36 %).

Since we looked into public space-related literature, *public space* was often mentioned as an output, partly in combination with other sub-dimensions. About half of the definitions of co-production and co-creation that have an output element mention *public space*. We, thus, added it as an additional sub-dimension. The other half is distributed throughout the remaining types of output. What is remarkable is a high number of outputs that do not belong to the existing sub-dimensions, thus these are put in *others*. These include, for instance, ideas and

experiences in co-creation definitions. Strikingly, *others*, instead of *public space*, is the most popular sub-dimension when it comes to co-design. What is also noticeable is that unlike definitions of co-creation and co-design, a number of definitions of co-production mention *public service* and *public good* as an output. This may be explained by the origin of the concept 'co-production' as it is rooted in the provision of public services (Ostrom, 1996). The sub-dimensions *policy*, *knowledge* and *value* are less relevant. None of the definitions refers to the sub-dimension *social order*, which is related to Sheila Jasanoff's work (e.g. Jasanoff, 2004).

**Table 3**  
Coding result on 'input'.

Sub-dimension	Example	Co-production (%)	Co-creation (%)	Co-design (%)	Total number of codings (for each input) (%)
Knowledge/expertise	"local knowledge and expertise accumulated by inhabitants and businesses" (Pugalís 2013)	1 (20%)	1 (33%)	2 (67%)	4 (36%)
Experience from different practices	"day-to-day experience" (Maciuliene et al. 2018)	0 (0%)	1 (33%)	0 (0%)	1 (9%)
Perspective	"feedback" (Stuchi et al. 2022)	0 (0%)	2 (67%)	0 (0%)	2 (18%)
Unspecified	"resources" (e.g., Maciuliene et al. 2018), "community assets" (Pesch et al. 2022)	1 (20%)	1 (33%)	1 (33%)	3 (27%)
Others	"ideas" (e.g., Book & Högdahl 2022); "sharing of costs, rights and responsibilities of public space" (e.g., Van Melik & Van der Krabben 2016)	3 (60%)	3 (100%)	1 (33%)	7 (64%)
Total number of codings (for each concept)		5	8	4	18
Total number of definitions with dimension 'input'		5 (out of 20)	3 (out of 14)	3 (out of 14)	11 (out of 48)

Note: n = number of codings; % = percentage of codings in relation to the total number of definitions with dimension 'input'; the most frequently mentioned sub-dimension is highlighted.

#### 4.5. Phase

The dimension 'phase' refers to a process where co-production, co-creation or co-design takes place. It consists of three stages starting from *planning*, *delivery* to *management* (see Table 5). In the *planning* phase, issues are discussed and decisions are made. After a plan is realized (i.e., *delivery*), *management* practices are required. Phase is one of the dimensions, which occasionally appears in definitions. Out of 48 definitions, 18 include phase (38 %); within those definitions, there are 24 codings. This dimension shows up most frequently in co-design definitions (43 %) followed by definitions of co-production (40 %) and co-creation (29 %).

What is remarkable is that different concepts have different focuses with regard to the phase. While the definitions of co-creation and co-design emphasize the *planning* phase, the definitions of co-production rather highlight the *delivery* phase. Apart from *planning*, co-creation also covers *delivery* and *management* phases, but not to the extent of co-production. Indeed, definitions of co-production, which mention more than one sub-dimension, always include *management*. This suggests that both co-creation and co-production can be used to refer to all phases, though with different focuses on phase. Interestingly, one definition of co-production covers the whole spectrum by saying "in all stages of project" (Schormans et al., 2019, 416).

#### 4.6. Means

The dimension 'means' refers to the way in which co-production, co-creation or co-design takes place. There is a wide range of forms from *change in role* to *innovative practice*. Table 6 illustrates examples to give a better idea of what each type of means refers to. Means is the most frequently used dimension. Out of 48 definitions, 44 include means (92 %); within those definitions, there are 69 codings. This dimension appears in definitions of the three concepts with a similar frequency.

While equally popular across three concepts, all definitions of co-creation include means. Among different types of means, the analysis

revealed that *participation* prevails in definitions of all three concepts. Interestingly though, when looking at the second and third places, there are differences. For co-production, *combination* and *others* rank second and third, while for co-creation, these are *others*, *collaboration*, and *innovative practice*. For co-design, *collaboration* and *change in role* are the second and third most common sub-dimensions. This suggests that except for *participation*, each concept has different focuses regarding the means. It is important to mention that we found further means that do not fit the existing types and, thus, added them to *others*. Some of the examples are written in Table 6.

#### 4.7. Context

The dimension 'context' refers to the characteristics of the location where co-production, co-creation or co-design takes place. While Lee et al. (2024) identified different types of contexts, this research reveals that not a single concept has context in its definitions when it comes to public space.

### 5. Findings of the comparative analysis

In this section, we present the result of a comparative analysis based on the systematic literature review and word frequency check. Generally speaking, the result of the systematic literature review reveals that the three concepts are defined similarly and used interchangeably and that there is no clear-cut distinction identified in public space literature. It is not unusual for the concepts to appear simultaneously. Around 45 % of examined articles (33 out of 73) use more than one concept; among 45 %, about one-third even use three concepts. However, only five articles with two concepts provide definitions. None of the examined articles explicitly discusses the differences among concepts, although some authors attempt to classify them. For instance, Caneparo and Bonavero (2016) place co-design as a subcategory of co-creation. While distinguishing intrinsic co-creation from extrinsic, Stuchi et al. (2022) see co-production as a type of extrinsic co-creation. Despite the lack of



**Table 4**  
Coding result on 'output'.

Sub-dimension	Example	Co-production n (%)	Co-creation n (%)	Co-design n (%)	Total number of codings (for each output) n (%)
Public space	"public space" (e.g., Khan 2013)	8 (50%)	5 (45%)	1 (20%)	14 (47%)
Public good	"public goods" (Ellery & Ellery 2019), "infrastructure" (O'Brien 2016)	2 (13%)	0 (0%)	0 (0%)	2 (7%)
Public service	"public service provision" (Roberts & Archer 2022)	3 (19%)	1 (9%)	0 (0%)	4 (13%)
Policy	"policy" (O'Brien 2016)	1 (6%)	0 (0%)	0 (0%)	1 (3%)
Knowledge	"societal knowledge" (Caneparo & Bonavero 2016)	0 (0%)	1 (9%)	0 (0%)	1 (3%)
Social order	n.a.	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Value	"value" (Wu et al. 2022)	0 (0%)	1 (9%)	0 (0%)	1 (3%)
Unspecified	"collaborative outcomes" (Ewing 2021); "products" (Mintrom et al. 2022)	2 (13%)	1 (25%)	1 (20%)	4 (13%)
Others	"connections" (Roberts & Archer 2022), "ideas, preferences and insights that can become powerful resources for innovation" (Maciulienė et al. 2018)	7 (44%)	4 (36%)	4 (80%)	15 (50%)
Total number of codings (for each concept)		23	13	6	42
Total number of definitions with dimension 'output'		16 (out of 20)	11 (out of 14)	5 (out of 14)	30 (out of 48)

Note: n = number of codings; % = percentage of codings in relation to the total number of definitions with dimension 'output'; the most frequently mentioned sub-dimension is highlighted.

**Table 5**  
Coding result on 'phase'.

Sub-dimension	Example	Co-production n (%)	Co-creation n (%)	Co-design n (%)	Total number of codings (for each phase) n (%)
Planning	"development" (De Filippi et al. 2020a), "design process" (Cruz et al. 2022b)	2 (25%)	4 (100%)	4 (67%)	10 (56%)
Delivery	"creation" (Remesar & Faro 2020), "implementation" (Stuchi et al. 2022)	6 (75%)	1 (25%)	2 (33%)	9 (50%)
Management	"maintenance" (O'Brien 2016), "usage" (Zlender et al. 2021)	3 (38%)	1 (25%)	0 (0%)	4 (22%)
Unspecified	"in all stages of project" (Schormans et al. 2019)	1 (13%)	0 (0%)	0 (0%)	1 (6%)
Total number of codings (for each concept)		12	6	6	24
Total number of definitions with dimension 'phase'		8 (out of 20)	4 (out of 14)	6 (out of 14)	18 (out of 48)

Note: n = number of codings; % = percentage of codings in relation to the total number of definitions with dimension 'phase'; the most frequently mentioned sub-dimension is highlighted.

agreement, we found a number of characteristics that may help clarify each concept (see [Table 7](#)).

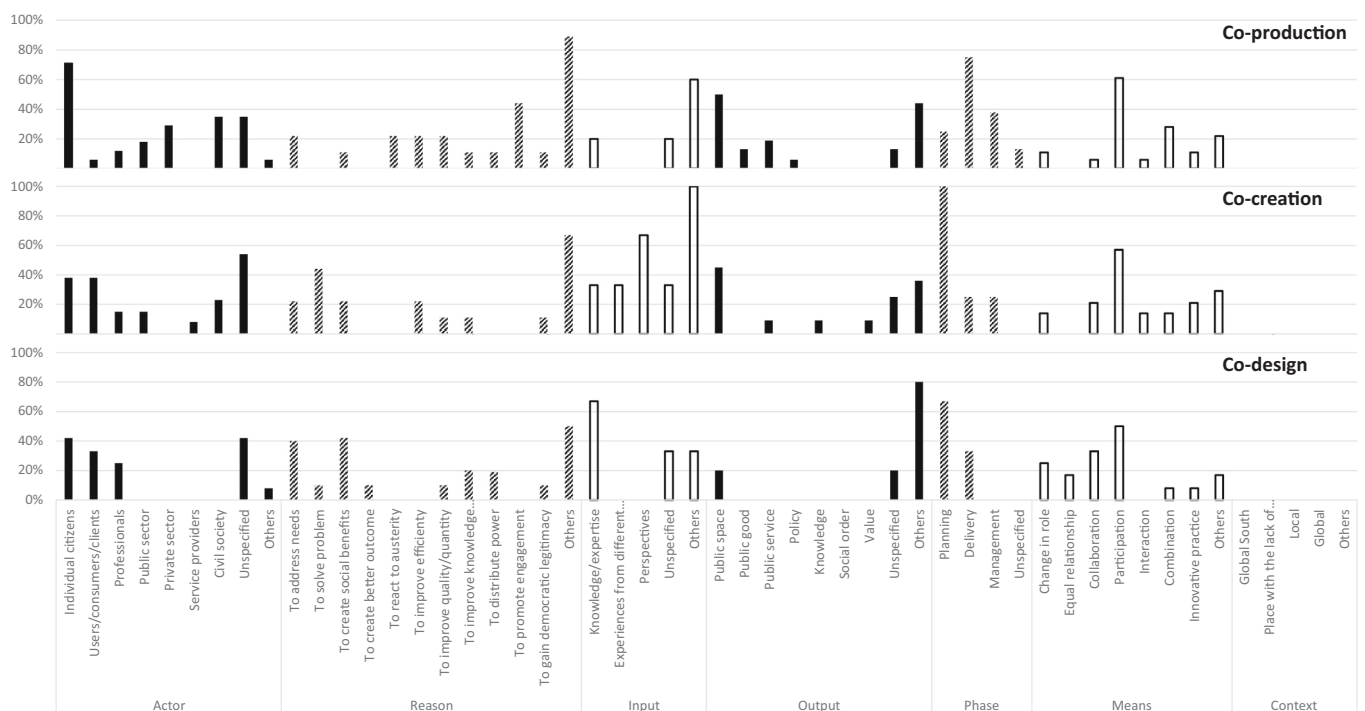
First, co-production, like the other two concepts, involves multiple

actors and especially individual citizens. In fact, citizens are the most frequently mentioned actors in co-production definitions. This is also evidenced by the word frequency check as the word 'citizen' appears

**Table 6**  
Coding result on 'means'.

Sub-dimension	Example	Co-production n (%)	Co-creation n (%)	Co-design n (%)	Total number of codings (for each means) n (%)
Change in role	"the role of the citizen has changed" (De Winne et al. 2020)	2 (11%)	2 (14%)	3 (25%)	7 (16%)
Equal relationship	"by creating equal collaboration" (Yang et al. 2021)	0 (0%)	0 (0%)	2 (17%)	2 (5%)
Collaboration	"working together" (Torabi et al. 2020), "joint and agreed action" (Tymoshchuk et al. 2021)	1 (6%)	3 (21%)	4 (33%)	8 (18%)
Participation	"actively involved" (O'Brien 2016), "directly include" (De Winne et al. 2020)	11 (61%)	8 (57%)	6 (50%)	25 (57%)
Interaction	"creative interaction" (Pugalis 2013)	1 (6%)	2 (14%)	0 (0%)	3 (7%)
Combination	"sharing" (Van Melik & Van der Krabben 2016), "synergizing and integrating concepts" (Wu et al. 2022)	5 (28%)	2 (14%)	1 (8%)	8 (18%)
Innovative practice	"the use of innovative digital technologies" (Maciulienė et al. 2018)	2 (11%)	3 (21%)	1 (8%)	6 (14%)
Others	"providing training and support" (Schormans et al. 2019), "awareness raising" (Bortolotti 2021)	4 (22%)	4 (29%)	2 (17%)	10 (23%)
Total number of codings (for each concept)		26	24	19	69
Total number of definitions with dimension 'means'		18 (out of 20)	14 (out of 14)	12 (out of 14)	44 (out of 48)

Note: n = number of codings; % = percentage of codings in relation to the total number of definitions with dimension 'means'; the most frequently mentioned sub-dimension is highlighted.



**Fig. 5.** Dimensions of the three concepts.

often. While there are various reasons, promoting engagement is the top reason for co-production; actors are thus engaged through participation. Both the systematic literature review and word frequency check reveal that participation is an important element of co-production. In addition to public space, public goods and public services are often mentioned as outputs of co-production. The word ‘service’ is, indeed, often found according to the word frequency check. This is partly because the origin of the concept is rooted in the provision of public services. Another interesting feature concerns phases. While co-production can cover whole phases, more emphasis is given to delivery and management phases. Finally, we found out that co-production is the only concept that includes 1) the private sector as an actor, 2) reacting to austerity as a reason, and 3) financial contribution as an input. The authors, thereby, distinguish co-production from privatization by highlighting the shared, instead of transfer of, responsibility.

Co-creation involves a wide range of actors for diverse reasons, but especially for solving a problem. Among others, citizens and users are often engaged. The involvement of users as co-creators is often found, possibly due to the origin of the concept in marketing and business literature. The word frequency check shows that the words ‘social’ and ‘local’ appear more often than co-production and co-design. A closer look reveals that those words are partly related to the above-mentioned reason, i.e., ‘social’ problems or needs are solved or addressed by ‘local’ people. A wide range of inputs is needed for co-creation to happen. Among others, there is an emphasis on creativity and ideas. Indeed, the word ‘idea’ appears frequently according to the word frequency check. Concerning output, co-creation is often related to the physical design of public space. This is in line with the result of the bibliometric analysis, which suggests that publications on design-related topics often use the concepts ‘co-creation’ and ‘co-design’. In terms of phase, co-creation can cover whole phases but there is more stress on the planning phase. The result of the word frequency check confirms it as the word ‘development’ appears often. Similar to co-production, participation is closely connected to co-creation. Thereby, digital tools are often mentioned. This is also observed in our bibliometric analysis as we found that digitalization in relation to public space often uses the concept ‘co-creation’. Interestingly, ‘design’ is one of the most frequently used words to describe co-creation.

Lastly, co-design engages numerous actors who cannot be classified precisely. This is in line with the result of the word frequency check as the word ‘people’ appears often. Individual citizens and users are key co-designers. Unlike the other two concepts, designers as professionals are often found in definitions. Similar to co-creation, co-design is connected to the physical design of public space and the knowledge and expertise of designers seem to be important inputs. Rather than output, the process matters when it comes to co-design. Indeed, the word ‘process’ is found frequently to describe co-design. Examples include “collaborative process” (Opromolla et al., 2019, 15), “bottom-up process” (Mussinelli et al., 2020, 51), “process through which collective creativity is applied” (Collina et al., 2020, 241). Among diverse reasons, creating social benefits and addressing needs are the top ones for co-design. An important difference is found regarding phase as co-design lays emphasis on the planning phase. Like the other two concepts, participation is the most frequently used means for co-design. Lastly, co-creation and co-design are closely connected; ‘creation’ is one of the most frequently used words to describe co-design.

To sum up, there seems to be no striking difference among co-production, co-creation and co-design. Rather, the concepts are defined similarly and used interchangeably in the literature. Many articles use multiple concepts simultaneously without discussing differences. This leads to the ambiguity of concepts. After studying 48 definitions in 73 articles, we argue that some clarity can nevertheless be provided by differentiating in particular between the following dimensions: actor, phase, and topic/field. First, we suggest using the concept ‘co-production’ when, among others, the private sector is involved, and the focus is on the delivery and management phase. In

**Table 7**  
Summary of comparative analysis.

	Co-production	Co-creation	Co-design
Actor	Individual citizens, private sector	Individual citizens, users	Individual citizens, users, designers
Reason	Emphasis on promoting engagement; includes austerity	Emphasis on solving a problem	Emphasis on creating social benefits and addressing needs
Input	Includes financial contribution	Creativity and ideas	Includes knowledge and expertise of designer
Output	Broad, services included	Mainly physical design of public space	Mainly physical design of public space
Phase	Delivery and management, if not whole phase	Planning, if not whole phase	Planning
Means	Participation of various actors, shared responsibility	Participation of locals, digital tools, design	Emphasis on collaborative process
Context	–	–	–
Topic/field	Broad	Specific (design-related)	Specific (design-related)

contrast, co-creation and co-design can be used when the topic is design-related and the focus is on the planning phase. The difference in terms of phase is in line with the suggestion made by Voorberg et al. (2015). They also suggest reserving the concept ‘co-creation’ for design and ‘co-production’ for implementation.

The nuances among the co-concepts we identified in the existing public space literature are shown in Table 7. We suggest that authors question if the use of co-concept is appropriate in the first place. When choosing a co-concept they should justify why it is chosen and explain the nuance explicitly. Interestingly, the existing definitions of co-concepts do not emphasize the role of the public sector, or more generally professionals. This may be because their role is self-evident. In any case, we suggest using co-concepts only if the relationship between professionals and citizens has genuinely changed in the direction of shared responsibility and decision-making power.

## 6. Conclusion

This study reveals that the concepts ‘co-production’, ‘co-creation’, and ‘co-design’ are defined similarly and used interchangeably in public space literature. We found that authors who use these concepts simultaneously in their articles often do not distinguish between them. Also, while these concepts are becoming popular in the field of public space, there is no article that discusses the differences among them. We use the term ‘cobiguity’ to describe the ambiguity that is created due to misuse (if not abuse) of co-concepts. The danger of ambiguity in the use of co-concepts as a broader trend is also highlighted by authors from other fields, such as Williams et al. (2020, 2), stating that the conflation of meanings “disregards significant differences between collaborative traditions, such as who is involved, how they are involved, the experiences people bring, and to what extent such processes address structural and interpersonal inequalities in power.” With regards to potential adverse effects, Schramm (2024) points to the exploitation of marginalized people’s resources, time, and labor.

For future research, it would be relevant to delineate co-production, co-creation and/or co-design more clearly from other related concepts such as participation. Both Albrechts (2013) and Watson (2014), who introduced the concept of co-production in planning literature, saw the potential of the co-concept in overcoming limitations of citizen participation by “organizing the relationship between (all) actors in a more open and equitable way” (Albrechts, 2013, 47). However, it has been questioned if the processes labeled with the co-concepts today are truly able to fulfill their aspiration of shared responsibility and a shift in

power relations. Ruess et al. (2023) argue that while the European Innovation Policy fosters the proliferation of co-concepts, it gives priority to economic benefits over social justice and democratic legitimation. Steen et al. (2018) point out potential pitfalls of co-concepts, i. e., the reinforced inequity between participants with uneven capabilities to take part and low representativeness. Our analysis also reveals that reasons and means stated by the definitions partly include distribution of power, a change in role, and equal relationships, but these have not been central to many authors engaging with the concepts. Using a clear definition that incorporates the core values of co-concepts is important. This paper provides a basis which we believe is the first step toward it.

This study has a number of limitations. We searched articles that contained the word ‘co-production’, ‘co-creation’ or ‘co-design’ in the title, abstract or keyword. The search term did not include linguistic variations of co-concepts or public space. On the one hand, it is possible that we may have overlooked relevant studies. On the other hand, we expected them to appear as a noun in the title, abstract or keyword if they were central to a publication. Also, we chose publications in English only. This is a limitation due to the manual coding for the systematic literature review. Lastly, due to the high number of publications on co-production, co-creation or co-design (almost 30,000 articles in English in WoS as of August 2023), only public space literature was considered. We acknowledge that analyzing beyond public space literature would also be valuable.

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### CRedit authorship contribution statement

**Dahae Lee:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Data curation, Conceptualization. **Patricia Feiertag:** Writing – review & editing, Writing – original draft, Validation, Methodology, Investigation. **Lena Unger:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Data availability

Data will be made available on request.

### References

- Albrechts, L. (2013). Reframing strategic spatial planning by using a coproduction perspective. *Planning Theory*, 12(1), 46–63.
- Caneparo, L., & Bonaverio, F. (2016). Neighborhood regeneration at the grassroots participation: Incubators' co-creative process and system. *International Journal of Architectural Research*, 10(2), 204–218.
- Cardullo, P., & Kitchin, R. (2019). Smart urbanism and smart citizenship: The neoliberal logic of 'citizen-focused' smart cities in Europe. *Environment and Planning C: Politics and Space*, 37(5), 813–830.
- Chinouya, M., & Aspinall, P. J. (2010). Ethical issues in targeted HIV prevention work among “Black African” migrants in London. *International Journal of Migration, Health and Social Care*, 6(4), 20–33.
- Collina, L., Galluzzo, L., Mastrantonio, C., & Monna, V. (2020). Hall of the future: A systemic research project for public interiors and spaces using co-design tools. *Strategic Design Research Journal*, 13(2), 234–248.
- De Filippi, F., Coscia, C., & Cocina, G. (2020b). European digital platforms for the care of public space and co-design. *Techné - Journal of Technology for Architecture and Environment*, 19, 134–141.
- Houstoun, L. (2003). *Business improvement districts* (2nd ed.). Washington, DC: Urban Land Institute.

- Hoyt, L., & Gopal-Agge, D. (2007). The business improvement district model: A balanced review of contemporary debates. *Geography Compass*, 1(4), 946–958.
- Jasanoff, S. (2004). *States of knowledge: The co-production of science and social order*. London: Routledge.
- Kayden, J., New York City Department of Planning, & Municipal Art Society. (2000). *Privately owned public space: The New York City experience*. New York: John Wiley and Sons.
- Lee, D. (2023). Actors, the actor network and their impact on public space management: Social network analysis as a method. *Spatial Research and Planning*, 81(4), 373–387.
- Lee, D., Feiertag, P., & Unger, L. (2024). Defining co-production: A review of the planning literature. *Journal of Planning Literature*, 39(2), 227–240.
- Lee, D., & Scholten, N. (2022). Do welfare states need privately owned public spaces? The relevance of and need for such spaces in German cities. *Journal of Urban Design*, 27(5), 513–527.
- Lee, D., & Scholten, N. (2024). Co-production of privately owned public space: Who, why, when, and how? *Urban Design International*, 29, 123–133.
- Lefebvre, H. (1974). *La production de l'espace*. Paris: Economica.
- Maciulienė, M. (2018). Mapping digital co-creation for urban communities and public places. *Systems*, 6(14), 3–11.
- Masterson, D., Josefsson, K. A., Robert, G., Nylander, E., & Kjellström, S. (2022). Mapping definitions of co-production and co-design in health and social care: A systematic scoping review providing lessons for the future. *Health Expectations*, 24, 902–913.
- Murray, M. (2010). Private management of public spaces: Nonprofit organizations and urban parks. *Harvard Environmental Law Review*, 34, 179–255.
- Mussinelli, E., Tartaglia, A., Castaldo, G., & Fanzini, D. (2020). The environmental technological project for the implementation of the 2030 agenda. *Sustainable Mediterranean Construction*, 51–55.
- Opromolla, A., Volpi, V., & Parente, G. (2019). Co-designing game solutions for hybrid urban spaces. How game elements can improve people experience with the mobility services. *Interaction Design and Architecture(s) Journal*, 40, 9–23.
- Ostrom, E. (1996). Crossing the great divide: Co-production, synergy, and development. *World Development*, 24(6), 1073–1087.
- Prahalad, C. K., & Ramaswamy, V. (2000). Co-opting customer competence. *Harvard Business Review*, 78, 79–90.
- Robert, G., Donetto, S., & Williams, O. (2021). Co-designing healthcare services with patients. In E. Loeffler, & T. Bovaird (Eds.), *The Palgrave handbook of co-production of public services and outcomes* (pp. 313–333). Springer.
- Ruess, A. K., Müller, R., & Pfothner, S. M. (2023). Opportunity or responsibility? Tracing co-creation in the European policy discourse. *Science and Public Policy*, 50(3), 433–444.
- Sanders, E., & Stappers, P. (2008). Co-creation and the new landscapes of design. *CoDesign*, 4(1), 5–18.
- Schormans, A., Wilton, R., & Marquis, N. (2019). Building collaboration in the co-production of knowledge with people with intellectual disabilities about their everyday use of city space. *Area*, 51, 415–422.
- Schramm, S. (2024). Co-production between insurgency and exploitation: Promises and precarities of a traveling concept. *Urban Planning*, 9.
- Shahab, S. (2022). Transaction costs in planning literature: A systematic review. *Journal of Planning Literature*, 37(3), 403–414.
- Steen, T., Brandsen, T., & Verschuere, B. (2018). The dark side of co-creation and co-production. In T. Brandsen, T. Steen, & B. Verschuere (Eds.), *Co-production and co-creation* (pp. 284–293). New York: Routledge.
- Stuchi, S., Paulino, S., & Gallouj, F. (2022). Social innovation in active mobility public services in the megacity of Sao Paulo. *Sustainability*, 14, 11834.
- Sylke, N. (2008). Urban transformation. From public and private space to spaces of hybrid character. *Czech Sociological Review*, 44(6), 1129–1149.
- Van Melik, R., & Van der Krabben, E. (2016). Co-production of public space: Policy translations from New York City to the Netherlands. *Town Planning Review*, 87(2), 139–158.
- Voorberg, W., Bekkers, V., & Tummers, L. (2015). A systematic review of co-creation and co-production. *Public Management Review*, 17(9), 1333–1357.
- Wang, Q., & Waltman, L. (2016). Large-scale analysis of the accuracy of the journal classification systems of Web of Science and Scopus. *Journal of Informetrics*, 10(2), 347–364.
- Watson, V. (2014). Co-production and collaboration in planning – The difference. *Planning Theory & Practice*, 15(1), 62–76.
- Whitaker, G. (1980). Co-production: Citizen participation in service delivery. *Public Administration Review*, 40(3), 240–246.
- Williams, O., Sarre, S., Papoulias, S. C., Knowles, S., Robert, G., Beresford, P., Rose, D., Carr, S., Kaur, M., & Palmer, V. J. (2020). Lost in the shadows: Reflections on the dark side of co-production. *Health Research Policy and Systems*, 18(43).

### Further reading

- Barbi, V., Ginocchini, G., & Sponza, C. (2020). Co-designing the accessibility: From participatory mapping to new inclusive itineraries through the cultural heritage of Bologna. *European Journal of Creative Practices in Cities and Landscapes*, 3(2), 122–140.
- Book, K., & Högdahl, E. (2022). *Equalizer: Breaking down the barriers at informal outdoor sport and recreational spaces*. Leisure Studies.
- Bortolotti, A. (2021). Refuse of the city: Rethinking waste management in Brussels. *Brussels Studies*, 160.

- Brazeau-Beliveau, N., & Cloutier, G. (2021). Citizen participation at the micro-community level: The case of the green alley projects in Quebec City. *Cities*, *112*, Article 103065.
- Cruz, M., Ersoy, A., Czischke, D., & Van Bueren, E. (2022a). A framework for co-design processes and visual collaborative methods: An action research through design in Chile. *Urban Planning*, *7*(3), 363–378.
- Cruz, M., Ersoy, A., Czischke, D., & Van Bueren, E. (2022b). Towards a framework for urban landscape co-design: Linking the participation ladder and design cycle. *International Journal of CoCreation in Design and the Arts.*, *19*(3), 233–252.
- De Filippi, F., Coscia, C., & Cocina, G. (2020a). Collaborative platforms for social innovation projects. The Miramap case in Turin. *Techné - Journal of Technology for Architecture and Environment*, *14*, 218–225.
- De Winne, J., Filipan, K., Moens, B., Devos, P., Leman, M., Botteldooren, D., & De Coensel, B. (2020). The soundscape hackathon as a methodology to accelerate co-creation of the urban public space. *Applied Sciences*, *10*, 1932.
- Ellery, P., & Ellery, J. (2019). Strengthening community sense of place through placemaking. *Urban Planning*, *4*(2), 237–248.
- Ewing, K. (2021). Spaces of transformative practice: Co-producing, (re)making and translating fractional urban space in Gugulethu, Cape Town. *Urban Forum*, *32*, 395–413.
- Foster, N. (2022). From urban consumption to production: Rethinking the role of festivals in urban development through co-creation. *Urban Planning*, *7*(3), 379–393.
- Gazley, B., LaFontant, C., & Cheng, Y. (2020). Does coproduction of public services support government's social equity goals? The case of U.S. State Parks. *Public Administration Review*, *80*(3), 349–359.
- Khan, A. (2013). On design and politics of co-producing public space: The long marches and the reincarnation of the 'forecourt' of the Pakistani Nation. *International Journal of Islamic Architecture*, *2*(1), 125–156.
- Maciuliene, M., Skarzauskiene, A., & Botteldooren, D. (2018). Developing a digital co-creation assessment methodology. *Contemporary Economics*, *12*(4), 399–408.
- Mintrom, M., Sumartojo, S., Kulic, D., Tian, L., Carreno-Medrano, P., & Allen, A. (2022). Robots in public spaces: Implications for policy design. *Policy Design and Practice*, *5*(2), 123–139.
- O'Brien, D. (2016). 311 Hotlines, territoriality, and the collaborative maintenance of the urban commons: Examining the intersection of a coproduction policy and evolved human behavior. *Evolutionary Behavioral Sciences*, *10*(2), 123–141.
- Pesch, A., Ochoa, K., Fletcher, K., Bermudez, V., Todaro, R., Salazar, J., ... Hirsh-Pasek, K. (2022). Reinventing the public square and early educational settings through culturally informed community co-design: Playful learning landscapes. *Frontiers in Psychology*, *13*, Article 933320.
- Pugalis, L. (2013). Briefing: The cultural life of public spaces. *Urban Design and Planning*, *166*(DP3), 151–155.
- Remesar, A., & Faro, J. (2020). Bon Pastor, a neighbourhood with a future. Let's make its remembrance claiming the symbolic accessibility. *European Journal of Creative Practices in Cities and Landscapes*, *3*(2), 105–125.
- Roberts, A., & Archer, B. (2022). Co-productive approaches to homelessness in England and Wales beyond the Vagrancy Act 1824 and Public Spaces Protection Orders. *British Journal of Community Justice*, *18*(1), 4–20.
- Torabi, N., Lindsay, J., Smith, J., Khor, L., & Sainsbury, O. (2020). Widening the lens: Understanding urban parks as a network. *Cities*, *98*, Article 102527.
- Tymoshchuk, M., Sosnova, N., Feshchur, R., Shyshkovskiy, S., & Kopytko, S. (2021). The multi-criteria planning model of urban spatial development with regard for the interests of stakeholders. *Financial and Credit Activities: Problems of Theory and Practice*, *5*(40), 569–581.
- Wilkie, S., & Michialino, P. (2014). The influence of participative co-production use for urban public-space regeneration on residents' perceptions of life satisfaction and social cohesion. *Journal of Architectural and Planning Research*, *31*(4), 271–281.
- Wu, J., Zhang, L., & Ren, X. (2022). Incorporating the co-creation method into social innovation design to promote intergenerational integration: A case study of a public square. *International Journal of Environmental Research and Public Health*, *19*, 12908.
- Yang, L., Zhang, L., Philippopoulos-Mihalopoulos, A., Chappin, E., & Van Dam, K. (2021). Integrating agent-based modeling, serious gaming, and co-design for planning transport infrastructure and public spaces. *Urban Design International*, *26*, 67–81.
- Zlender, V., Erjavec, S., & Marusic, B. (2021). Digitally supported co-creation within public open space development process: Experiences from the C3Places Project and potential for future urban practice. *Planning Practice & Research*, *36*(3), 247–267.