Building blocks in Planning research methodology: A roadmap to research design options

Niké Jacobs & Selna Cornelius

Abstract

Making sense of the myriad of available research design options is generally an arduous task for researchers. Proper research design is, subsequently, often neglected in Planning research, resulting in superficial research outputs. To simplify this task of designing research, a roadmap was created with 'building blocks' that organises available research design options. Supportive and guiding literature references are also provided for each listed option in the 'building blocks' as a point of departure for researchers. These 'building blocks' were created by conducting a systematic review of peer-reviewed articles, books, and grey literature on methodology for social and applied sciences (with a specific focus on Planning). Planning students and researchers may use these 'building blocks' as a point of departure for identifying and choosing options when designing their own research. Planning educators may find it useful in designing a thorough research methodology course.

Keywords: Literature review, mixed-methods research, multi-methods research, planning research, philosophical position, qualitative research, quantitative research, research methodology, research design, research methods

BOUBLOKKE IN BEPLANNING-NAVORSINGSMETODOLOGIE: 'n PADKAART VIR NAVORSINGSONTWERPOPSIES

Om sin te maak van die magdom beskikbare navorsingsontwerpopsies is dikwels 'n moeisame taak vir navorsers. Deeglike navorsingsontwerp word dikwels in Beplanningsnavorsing nagelaat met oppervlakkige uitsette tot gevolg. Om die ontwerp van navorsing te vereenvoudig, is 'n padkaart saamgestel met 'boublokke' wat beskikbare opsies vir navorsingsontwerp organiseer. Ondersteunende en rigtinggewende literatuurverwysings word ook vir elke gelyste opsie verskaf om as vertrekpunt vir navorsers te dien. Hierdie 'boublokke' is saamgestel deur middel van 'n sistematiese oorsig van ewekniе-geëvalueerde artikels, boeke en grys literatuur oor metodologie vir sosiale en toegepaste wetenskappe (met 'n spesifieke fokus op Beplanning). Beplanningstudente en -navorsers kan hierdie 'boublokke' gebruik as uitgangspunt om opsies te identifiseer en te kies tydens die samestelling van hul eie navorsingsontwerp. Beplanningsopvoedkundiges kan dit benut om 'n deeglike navorsings-metodologie-kursus te ontwerp.

Sleutelwoorde: Beplanningsnavorsing, filosofiese posisie, gemengde metodes navorsing, kwalitatiewe navorsing, kwantitatiewe navorsing, literatuurstudie, multi-metode navorsing, navorsingsmetodologie, navorsingsontwerp, navorsingsmetodes

LIKAROLO TSA MEKHOA OA HO ETSA LIPATLISISO TSA MERALO: 'MAPA O LEBISANG LIKHETHONG TSA MORALO OA LIPATLISISO

Khafetsa, ho utloisisa mefuta e fapaneng ea meralo ea lipatlisiso ho boima ho bafuputsi. Ha se hangata moralo o nepahetseng oa lipatlisiso o lateloang, 'me sena se fana ka liphetho tse hlokang botebo. Ele ho nolofatsa mosebetsi oa ho rala lipatlisiso tsa boithuto bona, ho ile ha etsoa 'mapa o bontšang 'likarolo' tsa mekhoa ea ho hlophisa meralo ea lipatlisiso. Lingoliloeng tsa boithuto tse amanang le 'likarolo' tsena li ile tsa sebelisoa ho fana ka tšehetso le tataiso bakeng sa bafuputsi. 'Likarolo' tsena li fihletsoe ka ho etsa tlhahlobo e hlophisitsoeng ea lingoliloeng, libuka, lingoliloeng tse hlahlobiloeng le maselinyana a lekolang mekhoa ea boithuto ba sechaba le mahlale (ka tsepamiso e khethehileng ho Meralo). Baithuti ba thero ea litoropo le bafuputsi ba ka sebelisa 'likarolo' tsena e le qaleho ea ho tseba le ho khetha mekhoa ea ho etsa lipatlisiso tsa bona. Barupeli ba thero ea liroropo le bona ba ka e fumana e le molemo ha ba rala thupelo e phethahetseng ea mekhoa oa ho etsa lipatlisiso.

1. INTRODUCTION

The neglect of thorough research design 'instruction' for Planning students and the lack in proper research design texts specific to Planning research (Du Toit & Mouton, 2013: 126; Farthing, 2016: xiii; Goldstein, 2012; Mageean, 1996) result in a frequent neglect

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of judicious research design at the offset of Planning research, occasioning poor and superficial research outputs (Farthing, 2016: xiii; Goldstein, 2012: 493-495; Jon, 2021; Tate, 2020: 1-2). Planning research distinctively "straddles traditional social sciences and professional training" (Sanchez, 2021: 89). As a result, Planning researchers often borrow from comprehensive and generic-like social science research design texts (Du Toit & Mouton, 2013: 126) and from those for other applied sciences (Næss & Saglie, 2000). Although exceedingly informative and supportive towards the development of Planning research methodology, these are not sufficient, as Planning research investigates both theory development and practical implications with possible improvements for spatial policy and organisation (Sanchez, 2021; Te Brömmelstroet, 2015). This emphasises the need for Planning-specific research design texts that cater for the specific needs of Planning research and organise the different research design considerations (Du Toit, 2010: 8).

Although broad research design frameworks are available for other disciplines, to the authors' knowledge, no similar frameworks exist for Planning research. This article endeavours to organise and simplify the myriad of available options to provide guidance ('a how-to-guide') for designing Planning research. By surveying research design texts and borrowing from personal research and student supervision experience, the authors present a visual roadmap of possible and available options for designing Planning research, in the form of 'building blocks', and provide supportive and guiding literature references for each listed option. The article concludes with the authors encouraging rigorous and creative Planning research design and suggesting pathways to further the Planning research design discourse.

2. LITERATURE REVIEW

2.1 'Building blocks' in research methodology

Designing research to adequately address a research problem may be challenging, especially when considering the myriad of available (and often unknown) research design options (Joubert *et al.*, 2016: xvii; Lombard, 2016: 3). Cohen *et al.* (2018: 3) describe this process as an 'art', where the researcher must reflect on different "trade-offs between what one would like to do and what is actually possible". Broadly speaking, this process may be organised according to three stages, namely the philosophical foundation, the research design, and the methods (Birks & Mills, 2015: 4-6; Creswell & Poth, 2018: 17; Opoku *et al.*, 2016: 45). Figure 1 presents these three stages. Typically, interaction with literature is intertwined within and among each of these stages to ensure that the purpose and logic of the 'building blocks' address the research problem and fit within the larger research design (Opoku *et al.*, 2016: 32; Yin, 2018: 5).

As illustrated in Figure 1, the foundation of a research inquiry is the researcher's philosophical position. This refers to the researcher's beliefs about the nature of the world and of research (Creswell, 2014: 6). Inevitably impelled by the philosophical foundation, the research design determines the manner in which the inquiry is held (Creswell, 2014: 3). This design informs the practical methods of data collection, reduction, and analysis. It is important to note that the process of designing research is iterative and recursive (Birks & Mills, 2015: 4). The research process may, therefore, be described as fluid.
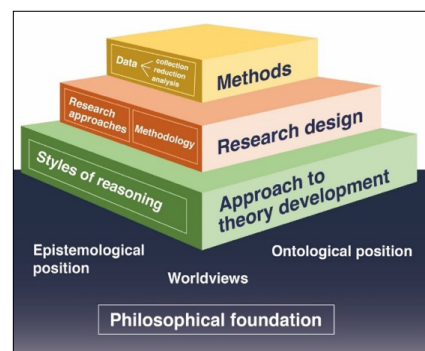

Figure 1:   Stages of the research design

Source: Authors' compilation

2.2 Planning research methodology

As an applied science, it is argued that Planning research must be designed to specifically focus on the multifaceted and complex professional planning environment. Within this environment, planners have to navigate between "places, communities, economies and policy", all shaping the physical space (MacCallum *et al.*, 2019: 3). Therefore, Planning research is uniquely situated between traditional social research and the professional planning environment (Du Toit & Mouton, 2013: 126; Sanchez, 2021: 89). In view of this, the aim of Planning research extends beyond mere knowledge-building and considers how this knowledge may "shape the future of places and societies" within the real world (MacCallum *et al.*, 2019: 3). In order to effectively capture this applied research, research methodology texts specifically aimed at providing guidance in Planning research design, are required.

3. RESEARCH METHODOLOGY

In order to construct a roadmap to Planning research design options in this article, a systematic literature review (Xiao & Watson, 2019: 101) was conducted. More specifically, a thematic synthesis was employed to extract, cluster, and eventually synthesise research methodology

themes (Xiao & Watson, 2019: 101) from literature into a framework, organising the options for designing Planning research.

3.1 Search strategy

The systematic literature review was employed in two main phases over a period of 30 months (19 March 2019-31 August 2021), as outlined in Table 1; an initial identification of research design texts (Phase 1) ensued by refining the identified research design texts (Phase 2), filtering this to specifically relate to Planning research.

In view of the established Planning research practice of borrowing from social science research texts and due to the limited number of available Planning research design texts (Du Toit & Mouton, 2013: 126; Farthing, 2016: xiii), Phase 1 of the research considered comprehensive and generic social science research methodology texts, from which the themes for the first draft of the 'building blocks' were created. The literature search was launched by determining relevant and appropriate search terms from research literature through an assessment of resources at the authors' local university library, and by conducting a backward citation search from randomly selected dissertations and theses from the local university library. Following this, a library search was performed to identify resources specifically aimed at providing guidance on research methodology for social and applied sciences. Consulted literature, specific to applied sciences, included a transdisciplinary array of business studies, counselling psychology, education, human service professions, medical studies, management studies, and Planning.

Once an acceptable draft for the 'building blocks' was created in Phase 1, the focus shifted specifically to Planning research design texts in Phase 2. Peer-reviewed articles and books addressing research design and methodology aimed specifically at Planning research were identified and analysed in Phase 2 and the draft for the

'building blocks' was continuously adjusted, expanded, and adapted accordingly. A backwards citation search was employed to ensure data saturation (see Table 1).

3.2 Inclusion and exclusion criteria

Literature inclusion and exclusion criteria were first limited to keyword searches performed on Scopus and supplemented by a backwards citation search on a variety of databases, including Google Scholar. Broad themes relating to 'research design', 'research philosophy', 'research approaches', 'research methodology', and 'research methods' were initially included in the keywords of the literature search during Phase 1. The literature found during this initial search was used to expand on the search terms. A broader electronic search was, subsequently, conducted. This process was repeated and eventually refined to focus specifically on Planning research design texts, as indicated in Table 1.

In addition, literature searches were limited to results in social and applied sciences, with preference given to well-cited peer-reviewed articles and books published by reputable publishers. These were regarded as dependable and high-quality research and were used as the main sources of information. Finally, the language of the consulted literature was limited to English and Afrikaans.

3.3 Literature identification

The authors read the titles and abstracts of the identified resources from the keyword search results to consider their relevance for further investigation and this, supported by backwards citation searches, subsequently informed the identification of auxiliary full-text articles and other supplementary texts. The authors then performed parallel independent assessments of the selected texts, by reading through the full-text articles and supplementary texts, to evaluate the quality and eligibility of the studies. Altogether 119 texts were ultimately consulted, comprising

79 sources from general social and applied sciences and 40 Planning-specific research sources, as indicated in Table 1.

3.4 Data extraction and analysis

After the initial search, the data from the literature were reduced through a process of coding and grouped into categories and themes (Cohen *et al.*, 2018: 668-671). The first draft of the 'building blocks' was created from these codes, categories, and themes. Table 1 provides a summative overview of the themes, categories and codes identified during Phase 1 of the research.

The identified themes were then applied as keywords in Phase 2 to expand the literature search to a broader electronic search, including peer-reviewed articles, library or online books, and well-cited grey literature. The first draft of the 'building blocks' was, subsequently, adjusted and expanded according to the codes, categories and themes identified in the additional literature texts (see Table 1). This process was repeated until a point of data saturation was reached.

3.5 Literature search findings

The result of this research process is visually presented as 'building blocks' in the following sections, providing a 'menu' of options that researchers may use as a roadmap in designing their own research. The authors continuously discussed and debated the placing and labels of the 'building blocks' throughout the research process, revisiting, re-evaluating and reworking the draft for the 'building blocks'. In addition, the draft for the 'building blocks' was amended according to discussions with two senior researchers. The authors have since employed the research results and specifically the 'building blocks' as presented in this article in their own research and successfully implemented these during student supervision.

Table 1: Summative overview of the systematic literature review employed in this study

Summative overview of the systematic literature review 19 March 2019-31 August 2021				
PHASE 1: Initial identification of research design texts				
Search strategy	**Number of resources**	**Themes**	**Categories**	**Codes**
Library search, including books, articles, theses, dissertations	79	Philosophy	Ontological positioning	7
Backwards citation search (from selected dissertations and theses)			Epistemological positioning	2
Inclusion and exclusion criteria			World views	7
Limited to topics of research design and research methodology			Styles of reasoning	4
Reputable publishers	All library resources were selected based on these inclusion criteria. Total number of sources thus: 79	Research design	Methodology	3
Peer-reviewed resources			Research strategies	14
Library resources		Methods	Data-collection methods	15
			Data-reduction methods	10
Afrikaans and English texts			Data-analysis methods	8
PHASE 2: Refining identified research design texts – Planning research				
Search strategy	**Number of resources**	**Adapted themes**	**Adapted categories**	**Adapted codes**
1. Keywords search on Scopus:				
'Research methodology' and 'urban planning' or 'planning'	102	Philosophy	Ontological positioning	8
'Research methods' and 'urban planning' or 'planning'	253		Epistemological positioning	2
'Research design' and 'urban planning' or 'planning'	99		World views	4
'Research approaches' and 'urban planning' or 'planning'	740	Research design	Styles of reasoning	4
'Research philosophy' and 'urban planning' or 'planning'	11		Research approach	12
'Planning research design'	15	Research design	Methodology	15
'Planning research methods'	10		Methodology type	17
'Planning research methodology'	6	Methods	Data-collection methods	26
'Planning research approaches'	1		Data-reduction methods	10
'Planning research philosophy'	0		Data-analysis methods	8
			Form of theoretical inquiry	11
2. Backwards citation search (all sources searched on various databases, including Scopus and Google Scholar)	Added sources for 3-year period (2019-2021), until data saturation was reached	Literature	Typology	20
			Collection methods	7
			Filtering methods	2
Inclusion and exclusion criteria			Analysis	2
Limited to keywords searches (as stipulated)			Reduction methods	2
Limited to Social Sciences and Applied Sciences	Final number of Planning-specific sources selected after all inclusion and exclusion criteria were applied: 40		Presentation of results	6
Peer-reviewed resources			Structure of results	6
Reputable publishers (well-cited research)				
Afrikaans and English texts				
Final total of selected resources:	79 social and applied sciences + 40 Planning research sources = **119**			

Source: Authors' compilation

4. RESULTS AND DISCUSSION

The ensuing sections explain how the 'building blocks' may be used. The 'building blocks' are presented according to the research design stages (Figure 1), along with 'building blocks' for using literature, since it dovetails with the entire research design.

4.1 A roadmap for using the building blocks

Constructing a research design involves choosing and customising the systematic research procedure that will maximise the validity of the findings (Du Toit, 2015: 61-62). Planning researchers are encouraged to employ the 'building blocks' (Figures 2-5) to determine the options available within the different stages of the research design (Figure 1) and to use this as a point of departure for further reading on the chosen 'building blocks'. A proper research design may be constructed by following the following steps.

Step 1: Preparation

The research design process commences with examining the research problem, since social inquiries are 'problem'-driven rather than 'methodology'-driven enquiries (Flyvbjerg, 2006: 245). Following this examination, the researcher first considers his/her own philosophical assumptions (options listed in Figure 2) and then reflects on the 'type' of data needed to address the research problem (Farthing, 2016: 3).

Step 2: Evaluate the research design options

The researcher then evaluates the purpose, logic, advantages, and disadvantages (Yin, 2018: 5) of the available research options listed in Figures 3 and 4, to make an informed decision on which is best suited to address the research problem within the *context* of his/her philosophical assumptions (Opoku *et al.*, 2016: 32). For this purpose, the authors refer readers

to literature discussing each listed option within the 'building blocks'. The listed literature references do not attempt to provide a comprehensive list of literature explaining that specific option, but are sources which the authors experienced as supportive and guiding when designing their own research and during student supervision.

From this point of departure, the researcher may search the literature (refer to Figure 5) for further reading on the available options and consider the ethical implications of these options (Lo Piccolo & Thomas, 2009).

The role and place of ethics in Planning research is an extensive issue and the scope of this article does not allow for comprehensive elaboration on this, as the purpose of the article is merely to provide a menu of options for 'building blocks' in research methodology. It is, nevertheless, suggested that researchers consider the ethical implications of these research design options at the start of the research, as some of these decisions will have an impact on how the research may progress (Farthing, 2016: 179).

Step 3: Build your research design

This article argues for a fluid approach to building the research design (Cohen *et al.*, 2011: 217; Farthing, 2016: 3), since the spatial environment is dynamic and research should "innovate and adapt at the same time" (Sanchez, 2021: 91). It is, however, exceedingly important to consider the coherence of the 'building block' choices between the different stages of research design (Figure 1). Each stage is informed by, and dependent on the previous (Farthing, 2016: 123), all reflecting a logical, practical and creative design to best address the research problem. Although this article argues for a fluid approach, it is accepted that the research design process is not linear, but reflexive in nature and should, therefore, be adaptable throughout the research process.

The 'building blocks' for creating a research design are presented in the following sections, according to the stages of research design (Figure 1).

4.2 Philosophical foundations

Farthing (2016: 24-25) criticises Planning research, by arguing that the theoretical stance of, or casual statements regarding the social world being examined, and the strategies applied to examine this social world are often in conflict within Planning research. Farthing (2016: 24-25) explains this with an example of how an ontological assumption of realism may influence strategy-making in the spatial observation of the functioning of individuals and groups; if the researcher observes this spatial reality through an "institutionalist lens, it produces an exceedingly selective view of reality and may potentially be in conflict with the ontological assumption of realism." To avoid this conflict, this article advocates that the philosophical position be made explicit, since it provides definite limitations for the research in the form of the researchers' experience and reasoning (Cohen *et al.*, 2011: 3).

Experience and reasoning influence the position a researcher takes in a study (Birks & Mills, 2015: 4), inform the choice of theories to be used (Creswell & Poth, 2018: 15; Saunders *et al.*, 2019:1 31), and ultimately how the research findings are interpreted. To this end, Du Toit *et al.* (2017: 458) advocate that the main paradigms of philosophical positioning and its relation to the research design be included in Planning research methodology curricula.

Figure 2 provides a roadmap to philosophical position options with elucidating references to simplify the process of determining one's own philosophical position. This article aligns itself with Hitchcock and Hughes' (1995: 19-20) view that one's belief of how the social world is perceived and understood (ontological position) informs the belief of what may be known (epistemological position),
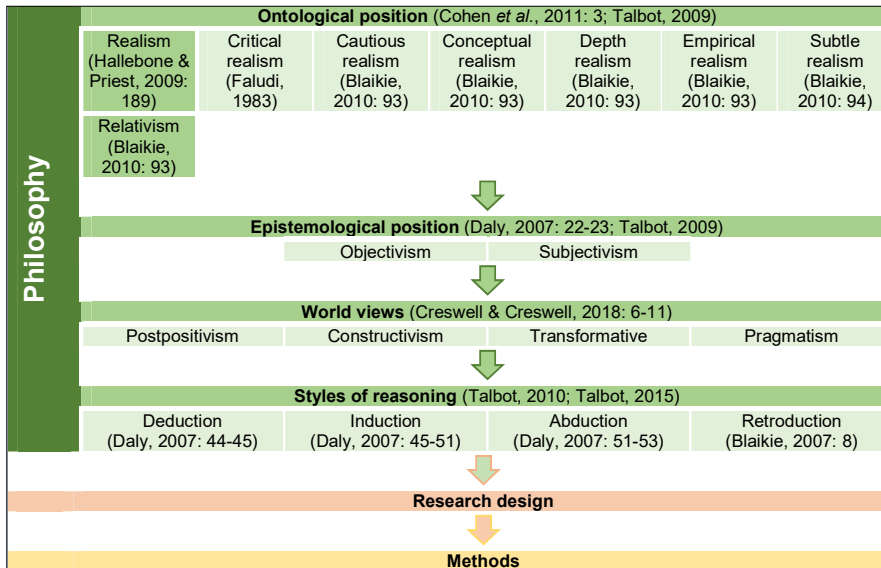
Figure 2:   Philosophical foundation building blocks

Source: Authors' compilation

culminating in how the social world is explained and what is to be done with that knowledge (world view). The research argument is formed (style of reasoning) within this framework of beliefs (Farthing, 2016: 149; Talbot, 2010).

Sections 4.2.1 to 4.2.4 elucidate some of the main concepts included in Figure 2.

4.2.1 Ontological position

The term 'ontology' is derived from the Greek for being and theory of knowledge (Hallebone & Priest, 2009: 189). This concerns the question: "What is the form and nature of reality, and what can be known about that reality?" (Ponterotto, 2005: 130). This belief determines what is to be investigated, thereby affecting the researcher's approach to, and understanding of the research problem.

The ontological position of relativism is also referred to as idealism (Blaikie & Priest, 2019; Hallebone & Priest, 2009: 189) and realism as rationalism (Faludi, 1973).

4.2.2 Epistemological position

In Greek, the term 'epistemology' may be described as the knowledge about knowledge (Hallebone & Priest, 2009: 181), concerning the question: "How do we, as inquirers, come to know the realities that we are trying to apprehend?" (Daly,

2007: 23). One's view of what may be known and how this knowledge is perceived has a major impact on "the general view of the research process", data-collection choices, and the approach to theoretical inquiry (Hitchcock & Hughes, 1995: 19-20). "Enquiring into the nature of reality" (Cohen *et al.*, 2011: 3) may be approached in two ways, namely objectivism and subjectivism.

4.2.3 World views

World views are the beliefs regarding the purpose of understanding and what is deemed valuable (Cohen *et al.*, 2011: 3). The world view, therefore, explains the motive for conducting research in the first place and the belief of what should be done with knowledge gained from the research (Hitchcock & Hughes, 1995: 20). Some research design texts refer to world views (Creswell, 2014: 6) as paradigms (Blaikie & Priest, 2019; Daly, 2007: 22) or axiology (Cohen *et al.*, 2011: 3).

4.2.4 Styles of reasoning

The style of reasoning is concerned with the researcher's approach to theory development (Saunders *et al.*, 2019: 152). That is to say, the manner in which the researcher argues to form his/her eventual claims from the research (Farthing, 2016: 149; Talbot, 2010). The phrase 'styles of reasoning' (Blaikie, 2007:

57) is also referred to as research strategy (Blaikie, 2007: 56), logics of inquiry (Blaikie & Priest, 2019), or paths of inquiry (Daly, 2007: 43).

The philosophical position is intricately linked to a researcher's personal beliefs and thus fundamentally informs the research design choices (Opoku *et al.*, 2016: 33).

4.3 Research design

A thorough research design at the outset of a study profoundly influences the quality of the outcome of the study (Farthing, 2016: 1-3). The research design signifies the procedures of inquiry (Creswell, 2014: 3) that explain the reasoning behind (Farthing, 2016: 7) the technical decisions of the research process (Blaikie & Priest, 2019).

Figure 3 provides a roadmap to research design options with elucidating references to simplify the process of determining the best-suited research design for a study. This article aligns with the notion of research design as a basic trilogy (Yin, 2018: xx,xxiii-xxiv), consisting of the research approach, methodology, and type of methodology. The research approach shapes the when and how of data collection and theoretical inquiry; the methodology indicates "the type of data to be collected" (Du Toit, 2015: 61), and the methodology type, the form of data collection.

Some scholars do not differentiate between the research approach and the types of methodology, and strictly link the research approaches to certain methodologies (Yin, 2018: xx, xxiii-xxiv, 17). According to the notion of the research design as a basic trilogy, however, it is argued that there is an important difference between the two and each should be chosen according to how well its logic and purpose (Yin, 2018: 5) align with the demands of the research problem and the logic of the researcher's philosophical position (Næss & Saglie, 2000).

Sections 4.3.1 to 4.3.3 elucidate some of the main concepts included in Figure 3.
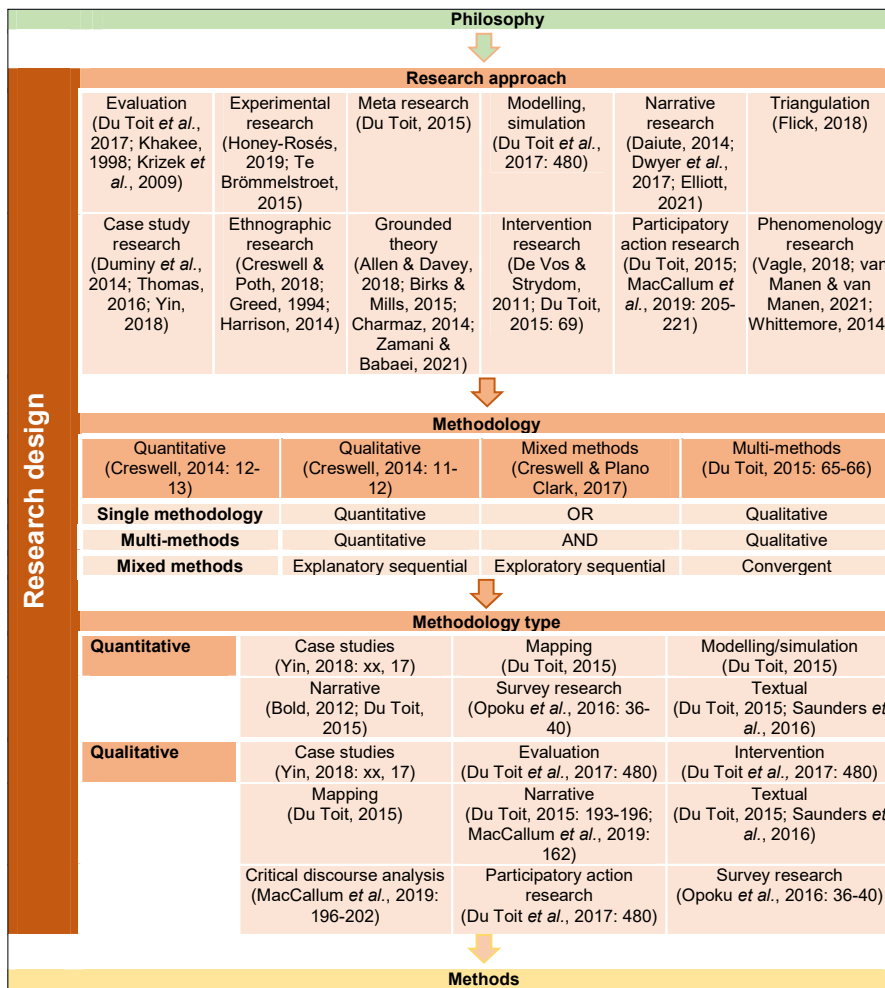
Philosophy					

Research design

Research approach					
Evaluation (Du Toit *et al.*, 2017; Khakee, 1998; Krizek *et al.*, 2009)	Experimental research (Honey-Rosés, 2019; Te Brömmelstroet, 2015)	Meta research (Du Toit, 2015)	Modelling, simulation (Du Toit *et al.*, 2017: 480)	Narrative research (Daiute, 2014; Dwyer *et al.*, 2017; Elliott, 2021)	Triangulation (Flick, 2018)
Case study research (Duminy *et al.*, 2014; Thomas, 2016; Yin, 2018)	Ethnographic research (Creswell & Poth, 2018; Greed, 1994; Harrison, 2014)	Grounded theory (Allen & Davey, 2018; Birks & Mills, 2015; Charmaz, 2014; Zamani & Babaei, 2021)	Intervention research (De Vos & Strydom, 2011; Du Toit, 2015: 69)	Participatory action research (Du Toit, 2015; MacCallum *et al.*, 2019: 205-221)	Phenomenology research (Vagle, 2018; van Manen & van Manen, 2021; Whittemore, 2014)

Methodology			
Quantitative (Creswell, 2014: 12-13)	Qualitative (Creswell, 2014: 11-12)	Mixed methods (Creswell & Plano Clark, 2017)	Multi-methods (Du Toit, 2015: 65-66)
Single methodology	Quantitative	OR	Qualitative
Multi-methods	Quantitative	AND	Qualitative
Mixed methods	Explanatory sequential	Exploratory sequential	Convergent

Methodology type			
Quantitative	Case studies (Yin, 2018: xx, 17)	Mapping (Du Toit, 2015)	Modelling/simulation (Du Toit, 2015)
	Narrative (Bold, 2012; Du Toit, 2015)	Survey research (Opoku *et al.*, 2016: 36-40)	Textual (Du Toit, 2015; Saunders *et al.*, 2016)
Qualitative	Case studies (Yin, 2018: xx, 17)	Evaluation (Du Toit *et al.*, 2017: 480)	Intervention (Du Toit *et al.*, 2017: 480)
	Mapping (Du Toit, 2015)	Narrative (Du Toit, 2015: 193-196; MacCallum *et al.*, 2019: 162)	Textual (Du Toit, 2015; Saunders *et al.*, 2016)
	Critical discourse analysis (MacCallum *et al.*, 2019: 196-202)	Participatory action research (Du Toit *et al.*, 2017: 480)	Survey research (Opoku *et al.*, 2016: 36-40)

Methods		

Figure 3: Research design building blocks

Source: Authors' compilation

4.3.1 Research approach

To determine the when and how of data collection, Du Toit (2015: 66) suggests asking the following questions: "What is the overall logic of my study?", and "Which option's purpose and logic aligns best with that of my study?" These logics and purposes will not necessarily be exact fits and the notion of "fitness for purpose" (Cohen *et al.*, 2011: 217) and the value of the researcher's own creativity is, therefore, reiterated. In terms of the alignment with the philosophical position, the researcher may consider whether the position on what may be known about reality (ontology) and the value and purpose of knowledge (world views) corresponds with the logic and purpose of the chosen research approach. The research approach is also referred to as research strategies (Sekaran & Bougie, 2013: 102), or mode of inquiry (Yin, 2018: 16).

4.3.2 Methodology

To determine an appropriate "type of data to be collected" (Du Toit, 2015: 61), one should consider whether the research problem requires (and philosophical position allows for) quantifiable data (quantitative methodology), open and explorable data (qualitative methodology) (MacCallum *et al.*, 2019: 35), or a mixture of both. This mixture may either be in the form of a mixed method or multi-method methodology (Du Toit, 2015: 65; Patton, 2002: 248).

Multi-methods refer to a study focusing on either a quantitative or a qualitative methodology and using the other to supplement the research findings (Cohen *et al.*, 2018: 37; Creswell & Plano Clark, 2011: 277; Du Toit, 2015: 65). An example of this is when a questionnaire (quantitative methodology) is used to determine certain preferences within a case study and concludes with a few open questions (qualitative methodology). The overall strength of this study lies in the qualitative methodology, since the data from the questionnaire provides the focal results from which an argument is formed in answer to the research problem, while the data from the open questions provide additional insights.

On the contrary, mixed methods refers to a study designed to integrate both quantitative and qualitative data-collection and -analysis techniques in and across all phases of the research process (Cohen *et al.*, 2018: 31-32). This integration may be done with an explanatory sequential design, an exploratory sequential design, or a convergent design (Creswell & Plano Clark, 2017: 63). An example of an explanatory sequential design is when the results of a statistical analysis (quantitative methodology) are used to produce talking points for a semi-structured interview (qualitative methodology). The results of the semi-structured interview are, thus, used to explain those of the statistical analysis and the combination of these two methodologies "provides a more complete understanding" of the research problem than either methodology would alone (Creswell, 2014: 4).

4.3.3 Type of methodology

The type of methodology is the form of data collection. This is specifically linked to a certain methodology and shapes the practical implications for data collection. The following questions may be asked to determine an appropriate type of methodology: Which of the options' intended outcome best aligns with the demands of my study?, and Which of the options' logic aligns with my epistemological position? For example, a study resting entirely on quantitative testing evidently assumes the position that reality may be measured objectively (Du Toit, 2015: 64).

Figure 3 shows that there seems to be repetition between the listed research approaches and the types of methodology, for instance, case study research (research approach) and case studies (type of methodology). This is, however, not the case. The notion of the 'basic trilogy' allows for creativity and flexibility to design research according to the demands of the research problem, and the correlating terms do not necessarily have to be applied in the same study (Yin, 2018: xx-xxi). Case study research is, for example, entirely designed to study a specific phenomenon within a specific setting to extract lessons from a real-world case (MacCallum *et al.*, 2019: 47-48; Yin, 2018: 15). Case studies, on the other hand, are used when a phenomenon is studied that happens to be or occurs in a setting, to inform or supplement a wider inquiry (MacCallum *et al.*, 2019: 49; Yin, 2018: xx-xxi).

4.4 Methods for data collection, reduction and analysis

The terms 'methods' and 'methodology' are often used interchangeably by researchers and in research design texts, but Cohen *et al.* (2011: 217) explain that there is an important distinction between the terms. Methods are the practical procedures for data collection and analysis to address the research problem within the framework of the type and form of data collection (methodology), set by the research design (Farthing, 2016: 123).

Figure 4 provides a roadmap to options for data-collection, reduction, and analysis methods, with elucidating references to simplify the process of determining the best-suited methods for a study.

Sections 4.4.1 to 4.4.3 elucidate some of the main concepts, as included in Figure 4.

4.4.1 Data-collection methods

To determine the best-suited methods, the following may be considered in view of the type of methodology: Which data-collection method's purpose and outcome would produce the most suitable data

for addressing the research question? Researchers are encouraged to truly reflect on this question and creatively choose the best methods for addressing their research problem, rather than relying on the 'default' data-collection methods (interviews and questionnaires) in Planning research (Farthing, 2016: 124, 127). Researchers may also consider the availability of practical resources, for example time, skills, and access to data or participants (MacCallum *et al.*, 2019: 35).

As a result of the nature of Planning practice (where records of Planning events "usually take textual form"), non-scholarly text plays a particularly important role in Planning research and may, therefore, be used as data (Farthing, 2016: 136-137; MacCallum *et al.*, 2019: 186). These texts, also known as grey literature (Bonato, 2018), refer to laws, policies, meetings, media statements, broadcasts, advertisements, correspondence, and social media feeds (MacCallum *et al.*, 2019: 187).

4.4.2 Data-reduction methods

Once the raw data are collected, they have to be reduced (transformed, organised, and categorised) into a form suitable for analysis (Blaikie & Priest, 2019; MacCallum *et al.*, 2019: 39). This may be completed in a traditional manner (as explained by the authors referred to in Figure 4) or with computer-assisted data-analysis software, for instance ATLAS.ti.

4.4.3 Data-analysis methods

After the raw data have been reduced, they may now be analysed. The analysis entails "developing an argument about the claims that can be made" from the research (Farthing, 2016: 149) and finding possible solutions to the research problem. This may also be

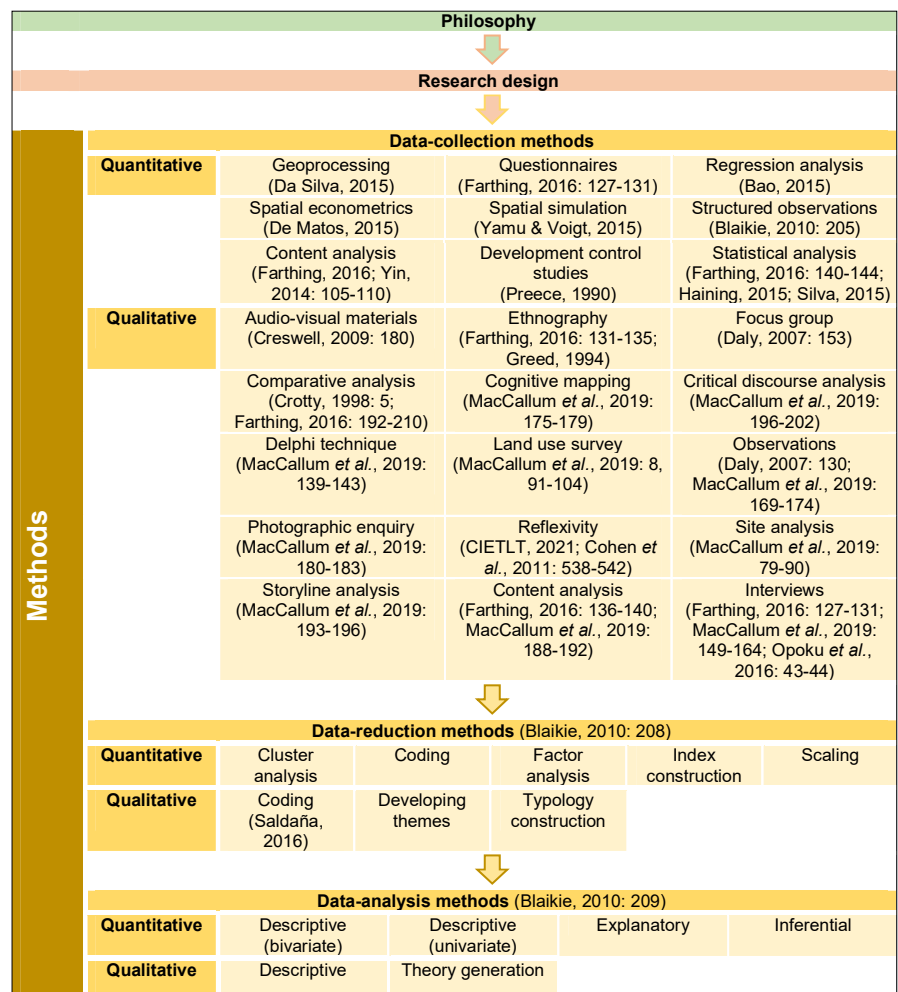| Philosophy				
Research design				
Data-collection methods				
Quantitative	Geoprocessing (Da Silva, 2015)	Questionnaires (Farthing, 2016: 127-131)	Regression analysis (Bao, 2015)	
	Spatial econometrics (De Matos, 2015)	Spatial simulation (Yamu & Voigt, 2015)	Structured observations (Blaikie, 2010: 205)	
	Content analysis (Farthing, 2016; Yin, 2014: 105-110)	Development control studies (Preece, 1990)	Statistical analysis (Farthing, 2016: 140-144; Haining, 2015; Silva, 2015)	
Qualitative	Audio-visual materials (Creswell, 2009: 180)	Ethnography (Farthing, 2016: 131-135; Greed, 1994)	Focus group (Daly, 2007: 153)	
	Comparative analysis (Crotty, 1998: 5; Farthing, 2016: 192-210)	Cognitive mapping (MacCallum *et al.*, 2019: 175-179)	Critical discourse analysis (MacCallum *et al.*, 2019: 196-202)	
	Delphi technique (MacCallum *et al.*, 2019: 139-143)	Land use survey (MacCallum *et al.*, 2019: 8, 91-104)	Observations (Daly, 2007: 130; MacCallum *et al.*, 2019: 169-174)	
	Photographic enquiry (MacCallum *et al.*, 2019: 180-183)	Reflexivity (CIETLT, 2021; Cohen *et al.*, 2011: 538-542)	Site analysis (MacCallum *et al.*, 2019: 79-90)	
	Storyline analysis (MacCallum *et al.*, 2019: 193-196)	Content analysis (Farthing, 2016: 136-140; MacCallum *et al.*, 2019: 188-192)	Interviews (Farthing, 2016: 127-131; MacCallum *et al.*, 2019: 149-164; Opoku *et al.*, 2016: 43-44)	
Data-reduction methods (Blaikie, 2010: 208)				
Quantitative	Cluster analysis	Coding	Factor analysis	Index construction	Scaling
Qualitative	Coding (Saldaña, 2016)	Developing themes	Typology construction		
Data-analysis methods (Blaikie, 2010: 209)				
Quantitative	Descriptive (bivariate)	Descriptive (univariate)	Explanatory	Inferential
Qualitative	Descriptive	Theory generation		

Figure 4: Building blocks for data collection and analysis methods

Source: Authors' compilation

completed in a traditional manner (as explained by the authors referred to in Figure 4) or with computer-assisted data-analysis software.

Depending on the research design and dovetailing with the various 'building blocks', literature provides context to the research. How it is used differs according to the purpose and placing thereof within the research process.

4.5 Using literature

Literature in Planning research is typically used without applying a rigorous design to minimise bias and to ensure the validity and quality thereof (Xiao & Watson, 2019: 93, 103). A quality and valid literature inquiry is, however, exceedingly important, since the frontier of knowledge cannot be pushed without knowing where the frontier is (Xiao & Watson, 2019: 93). The how and when of using literature is dependent on the research design (Fouché & Delport, 2011: 133) and the purpose and placing thereof within the research process.

Figure 5 provides a roadmap to literature usage options, with elucidating references to simplify the process of designing the literature enquiry for a theoretical framework, literature review and/or literature study.

Sections 4.5.1 to 4.5.7 elucidate some of the main concepts in Figure 5.

4.5.1 Form of theoretical inquiry

The form of the theoretical inquiry differs depending on its placing within the research process. The lines between the theoretical framework and the literature review often blur and the extent to which the two are distinguished depends on the purpose of the writing (Charmaz, 2014: 305). The theoretical framework explains the researcher's understanding of the context, system, subject and/or "empirical reality" (MacCallum *et al.*, 2019: 19-20; Næss & Saglie, 2000) that informs the researcher's approach to the research problem and design. The literature review criticises, engages with, and/or reports on

current knowledge in the scholarship (Farthing, 2016: 65; Mouton, 2001: 87), and assists in establishing the contribution of one's research to the broader scholarly discourse (MacCallum *et al.*, 2019: 57).

Planning theory is "notoriously slippery and hard to pinpoint", since Planning is an integrative practice with no predominant epistemology (MacCallum *et al.*, 2019: 20). The theoretical framework for Planning research may focus on one of, or integrate three categories: a substantive, a procedural, and a contextual theoretical framework (MacCallum *et al.*, 2019: 21).

Substantive refers to theories about a specific dimension of Planning, for example, environmental sustainability or social justice. Procedural refers to Planning processes and practices for advancing knowledge and comprehending complex spatial problems. Contextual refers to the broader sociopolitical, sociocultural, and socio-economic environments in which Planning decisions are made (Hoch, 2011: ix; MacCallum *et al.*, 2019: 21). To explore different Planning theories, researchers are referred to Fainstein and Defilippis (2016); Faludi (1973); Rydin (2021), and Taylor (1998).
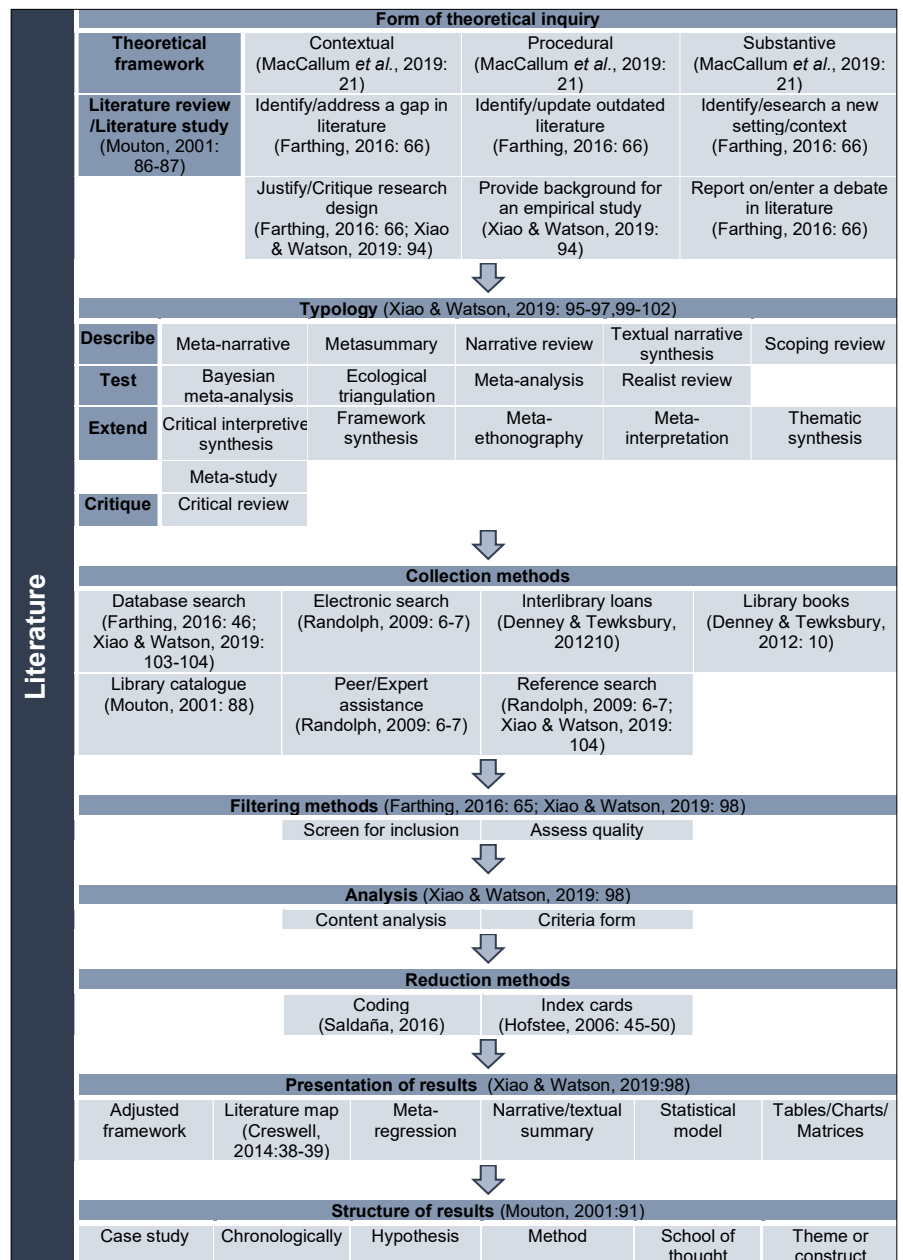

Figure 5:   Building blocks for using literature

Source: Authors' compilation

Literature reviews are often criticised for not being critical enough; they do not outrightly seek "to develop an argument about the limitations of current research [or] provide [adequate] justification for further research" (Farthing, 2016: 64-65). Cassim (2019: 42) explains this "critical" review as entering a conversation with the scholarship – finding authors who agree, authors who disagree, and comparing these viewpoints.

Mouton (2001: 86) differentiates between a literature review and a literature study. He explains that a literature study uses literature to generate data (Mouton, 2001: 86-87) for textual studies, for instance (see Figure 3), rather than only engaging with and/or criticising literature.

4.5.2 Typology

The typology of the theoretical inquiry depends on the purpose of the inquiry and may be determined by comparing the logic and purpose of these typologies with the desired outcome, as called for by the research problem and design. These may also be used in a hybrid manner (Xiao & Watson, 2019: 95-102).

4.5.3 Collection methods

Xiao and Watson (2019: 104) note that the most common method for literature collection is through databases, and suggest that there are numerous other methods, as indicated in Figure 5. Collecting literature by means of more than one method enables a wider read and, therefore, a more thorough inquiry that ultimately results in higher quality research outcomes.

It is important to note that, depending on the purpose of the writing, grey literature may also be sourced (Pojani *et al.*, 2018: 1; Xiao & Watson, 2019: 105). Researchers may refer to Bonato (2018) for procedural guidance on using grey literature.

4.5.4 Filtering methods

In ensuring the relevance to the research problem, the collected literature is filtered by screening for inclusion and assessing its quality (Farthing, 2016: 65; Xiao &

Watson, 2019: 98). Farthing (2016: 65) suggests that this filtering process may, for Planning research, lead to examining and analysing a small number of literature.

4.5.5 Analysis methods

As with the empirical data (see Figure 4), once the literature is collected, it should be analysed. The analysis method is chosen by considering its logic and purpose and determining which aligns best with the purpose of the inquiry. It is extremely important to conduct this analysis ethically, by reviewing or studying the literature as a whole, in order to prevent distortion of the original intention (Xiao & Watson, 2019: 107).

4.5.6 Reduction methods

In order to gain an "in-depth understanding" (MacCallum *et al.*, 2019: 188), the data/information in the literature must be reduced. To determine the appropriate reduction method, the researcher may consider the logic and purpose of the method and compare it to the needs posed by the purpose of the inquiry. These processes of analysis and reduction may be completed either in the traditional manner or with computer-assisted qualitative data analysis software (CAQDAS). Researchers may refer to Smit and Scherman (2021) for using CAQDAS to reduce literature.

4.5.7 Structure of the results

Once the data are analysed, the results may be structured and presented in various ways (see Figure 5). These depend on the purpose of the inquiry and the argument to be conveyed. Researchers should resolve which structuring method would contribute best to strengthen their argument.

5. CONCLUDING REMARKS

The myriad of options that exist for research design increases the complexity of a rigorous research design, which many researchers find confusing and daunting. In addition, a shortage of proper Planning research design texts and a neglect of thorough research design

instruction for Planning students result in an extremely challenging and time-consuming orientation process during the initial stages of research. Consequently, many Planning researchers do not allow sufficient time for thorough planning at the beginning of the research process, resulting in often poor and superficial research outputs.

This article urges Planning students and researchers to utilise the 'building blocks' to systematically organise and build the best-suited research design for their specific and unique research problems. This article, however, does not suggest a rigid approach, but argues for a fluid approach to Planning research design, encouraging the individuality and creativity of the researcher in relation to specific and unique research problems. A research design process should be reflexive and adaptable, and not merely a linear application of the 'building blocks'. It is also recommended that Planning students and researchers do not simply and conveniently revert to familiar research design options. To this end, the 'building blocks' provide research design options for the philosophical positioning, the research design, the research methods, and the literature review that may be explored.

It is, moreover, suggested that these 'building blocks' be used as a framework for designing research methodology courses that are often required by accredited Planning programmes. This may assist students in gaining a broad overview of the research design process, preventing them from being restricted by the myriad of available options. It may, subsequently, assist in answering Du Toit *et al.*'s (2017) call to include the main paradigms of the philosophical position in Planning methodology curricula. Finally, it may support students to systematically organise the methodology sections of their dissertations and theses according to the different 'building blocks'.

It is important to note that the 'building blocks' presented in this article are intended to be used as

an initial orientation or starting point for Planning researchers and do not attempt to provide an exhaustive list or a detailed description of the various research options available. It is, however, acknowledged that there are still numerous opportunities to expand the options for Planning research design by analysing research designs used in previous Planning studies, rather than only extracting data from research design texts. Doing so may provide illustrative, Planning-specific examples of these 'building blocks'.

It is also suggested that, in view of the many contrasting opinions between major general research design texts, a useful addition to this discourse may be to highlight what aspects of research design seem well established and what aspects are contested among Planning scholars. Lastly, it is proposed that a valuable improvement to this discourse may be to explore the Planning-specific ethical implications of the various 'building blocks'.

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