A TYPOLOGY OF DESIGNS FOR SOCIAL RESEARCH IN THE BUILT ENVIRONMENT

by
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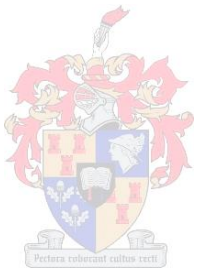

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Declaration

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Abstract

The aim of this metamethodological study was to construct a typology of designs for social research in the built environment, i.e., architecture, urban design and planning. Currently there is no such typology, while the notion of “research design” is relatively unknown in methodological literature in the built environment field. An outline of the dimensions of social research provided a theoretical lens for methodological analyses, and identified six methodological considerations as classification criteria, including (1) research context, (2) research aim, (3) research purpose, (4) methodological paradigm, (5) methodological approach, and (6) source of data. Exploratory interviews and a survey and methodological content analysis of built environment theses provided a better understanding of methodological issues in conducting social research in the built environment and the potential relevance of a typology of designs. A review of methodological literature identified 25 research design subtypes that can be clustered into 10 prototypical designs for inclusion in the typology, namely: (1) surveys, (2) experiments, (3) modelling, simulation, mapping and visualisation, (4) textual and narrative studies, (5) field studies, (6) case studies, (7) intervention research, (8) evaluation research, (9) participatory action research, and (10) metaresearch. A survey and methodological content analysis of journal articles determined the extent to which these designs feature in social research in the built environment. Although all the designs and subtypes feature, metaresearch, case studies, evaluation research and surveys predominate. An initial typology classified the 10 prototypical designs in terms of the six methodological considerations. The typology was tested to see how well it classified the designs of actual studies and revised accordingly. Possible benefits of the typology include greater clarification, improved teaching and decision-making, and methodological reflection. Thus, the typology may support lecturers, students, supervisors, researchers, peer-reviewers and practitioners to have a more articulate, reflexive, and critical orientation with regard to research design to maximise the validity of findings and advance theory, methodology and practice in built environment disciplines. The study concludes that the typology may also mitigate post-modern criticisms against social research in the built environment.

Uittreksel

Die doel van hierdie metametodologiese studie was om `n tipologie van ontwerpe vir sosiale navorsing in die bou-omgewing (d.w.s. argitektuur, stadsontwerp en beplanning) te konstrueer. Tans is daar geen so tipologie nie, terwyl die nosie van “navorsingsontwerp” relatief onbekend is in metodologiese literatuur in die bou-omgewing veld. `n Uiteensetting van die dimensies van sosiale navorsing het `n teoretiese lens vir metodologiese analises verskaf en ses metodologiese konsiderasies as klassifikasie kriteria geïdentifiseer, insluitend (1) navorsingskonteks, (2) navorsingsoogmerk, (3) navorsingsdoelwit, (4) metodologiese paradigma, (5) metodologiese benadering, en (6) data bron. Verkennende onderhoude en `n opname en metodologiese inhoudsanalise van bou-omgewing tesisse het `n beter begrip van metodologiese kwessies in sosiale navorsing in die bou-omgewing en die moontlike relevansie van `n tipologie van ontwerpe verskaf. `n Oorsig van metodologiese literatuur het 25 navorsingsontwerp subtipes geïdentifiseer wat in 10 prototipe ontwerpe gegroepeer kan word vir insluiting in die tipologie, naamlik (1) opnames, (2) eksperimente, (3) modellering, simulasie, kartering en visualisering, (4) tekstuele en narratiewe studies, (5) veldstudies, (6) gevallestudies, (7) intervensie navorsing, (8) evaluasie navorsing, (9) deelnemende aksie navorsing, en (10) metanavorsing. `n Opname en metodologiese inhoudsanalise van joernaal artikels het die mate waartoe hierdie ontwerpe in sosiale navorsing in die bou-omgewing voorkom bepaal. Alhoewel al die ontwerpe en subtipes voorkom, is metanavorsing, gevallestudies, evaluasie navorsing en opnames predominant. `n Aanvanklike tipologie het die 10 prototipe ontwerpe in terme van die ses metodologiese konsiderasies geklassifiseer. Die tipologie is getoets om te sien hoe goed dit die ontwerpe van werklike studies klassifiseer en dienooreenkomstig gewysig. Moontlike voordele van die tipologie sluit in verbeterde klarifikasie, onderrig, besluitneming en metodologiese refleksie. Die tipologie kan dus dosente, studente, studieleiers, navorsers, beoordelaars en praktisyns ondersteun om `n meer geartikuleerde, refleksiewe en kritiese oriëntasie ten opsigte van navorsingsontwerp te hê om die geldigheid van bevindinge te maksimeer en teorie, metodologie en praktyk in bou-omgewing dissiplines te bevorder. Die studie kom tot die gevolgtrekking dat die tipologie ook postmoderne kritiek teen sosiale navorsing in die bou-omgewing kan mitigeer.

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List of abbreviations

ANN	Artificial Neural Network Modelling
ANOVA	Analysis of Variance
CSIR	Council for Scientific and Industrial Research
GAM	Goals-Achievement Matrix
GIS	Geographic Information Systems
HSRC	Human Sciences Research Council
JAPR	Journal of Architectural and Planning Research
JPER	Journal of Planning Education and Research
JUD	Journal of Urban Design
NGO	Non-government organisation
PAR	Participatory Action Research
PBS	Planning Balance Sheet
POE	Post Occupancy Evaluation
SEM	Structured Equation Modelling
SNA	Social Network Analysis
SNIP	Source Normalised Impact per Paper
SPSS	Statistical Package for the Social Sciences

Chapter 1 Introduction

1.1 BACKGROUND TO THE STUDY

As a first-year planning student at the University of Pretoria in 1994, I was interested in the theoretical knowledge in our planning subjects and supplementaries like economics, geography, sociology, etc. However, my interest shifted to the production of this knowledge, in particular the methodology and validity thereof, when a substantial part of our second-year sociology course focused on research methodology, i.e., the study of research designs and methods for valid knowledge production.[1]

While most planning students found research methodology rather abstract, baffling or even inconsequential, a few of us appreciated that there were (supposedly) logical and rational procedures for producing the knowledge we had to study. However, it soon became apparent that research methodology was by no means straightforward. In fact, social research was shown to be riddled with complexities, while research methodology gives rise to all sorts of questions whether any knowledge could be reasonably true or valid. Still, there was now an awareness of designs and methods for researching relatively "valid" knowledge and that these designs and methods could be studied and analysed through research methodology.

Yet, research methodology was primarily the domain of the social sciences. Planning subjects did not cover research methodology apart from short courses in applied research for researching actual planning problems in practice one day. Research methodology was best left to subjects like sociology. However, sociology's treatment of research methodology was, understandably, limited to researching social or sociological

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[1] It is important to make a clear distinction early on between the terms "research methodology", "research design", and "research method". Blaikie (1993:7) points out that we often use these terms interchangeably even though they mean different things. He describes "research methodology" as "the analysis of how research should or does proceed. It includes discussions of how theories are generated and tested – what kind of logic is used, what criteria they have to satisfy." "Research methodology", therefore, involves the *study* of research designs and methods. He then describes "research methods" as "actual techniques or procedures used to gather and analyse data."

A further distinction should be made between "research design" and "research methods" (e.g., see De Vaus, 2001:9; Bryman & Teevan, 2005:24). "Research design", which is the object of this study, refers to the overall plan for conducting research (a more detailed definition follows later on in this chapter). "Research methods" refers to techniques or procedures within a research design to collect, analyse, and interpret data (Creswell, 2009:15). While the literature is relatively inconsistent in the use of these terms, some methodology textbooks actually confuse them. In this dissertation I mostly use the term "research design" since it constitutes the object of this study, while I sometimes use the term "research designs and methods", or just "methods" to refer to research designs and methods in general.

knowledge. What, then, about research for planning knowledge and knowledge for other built environment disciplines like architecture and urban design?

An overview of titles of methodology textbooks made it seem as if many social sciences had their own methodology, evident in titles like *Sociological research methods*, *Psychological research methods*, *Educational research methods*, etc. Yet, what about a methodology for built environment disciplines? This question, however, remained unanswered at the time. Instead, as final-year students, we were referred to Paul Leedy's text *Practical research: Planning and Design*, which was, and still is, a popular yet generic and almost recipe-like text that we had to study ourselves in preparation for researching and writing our research reports. We studied Leedy's text and did our research, although some of us wondered about the applicability of different designs and methods to our field of study or even the validity of the knowledge we were producing.

After graduating, I worked for a development-planning consultancy and subsequently for the South African Human Sciences Research Council (HSRC), doing mostly applied or contract research in the broader urban development arena. Again, questions arose about a methodology for social research in the built environment, but there was little time and space to reflect on these questions in a critical manner. Research was considered good if it fitted a client's brief or had policy relevance, while the validity and reliability of findings were less of a concern.[2]

At the same time, a colleague in the Built Environment Programme at the South African Council for Scientific and Industrial Research (CSIR) raised similar questions after struggling to locate a methodology for her doctorate in urban design. At that point, there was also a debate within the Built Environment Programme about methodological issues after researchers from "hard science" programmes questioned researchers in the Built Environment Programme about the methodological and scientific status of their research (Karina Landman, personal discussion, 2005). The debate, however, was short-lived and built environment researchers were given the CSIR's *Good Research Guide* (Scholes, 2003) – an 18-page document focusing on how to conduct deductive hypothesis-testing research.

After more than five years of practising research, I returned to the University of Pretoria to lecture planning subjects and coordinate research courses. Not much had changed since

2 However, parliamentary-grant-funded research at the HSRC usually provided some space to consider issues of validity and reliability.

I had been a student. Students still did undergraduate methodology courses through social science departments in preparation for researching and writing their final-year research reports, and still struggled to understand the applicability of different designs and methods to our field of study. Students still used Leedy's text, since planning and other built environment disciplines still lacked their own methodology textbooks.

A year prior to this study, I conducted extensive literature searches to see whether there were any signs of built environment disciplines developing their own methodology or publishing their own methodology textbooks. The searches offered little to suggest so. A few textbooks that had recently been published in the built environment field tended to be limited to specific research contexts (i.e., basic vs. applied) or applications (i.e., intervention, evaluation, etc.) Nevertheless, the literature supported many of my observations thus far and provided two premises for a research problem.

The first premise, which is particularly important in understanding the problem, is that built environment disciplines are primarily applied sciences focusing on the *application* more so than *generation* of knowledge (e.g., see Klosterman, 1983:216). Dyck (1994:143) specifically refers to architecture and planning as examples, and states that knowledge in these fields is perhaps valued more for its instrumental rather than intrinsic value. Built environment disciplines are consequently less concerned with research methodology, since the latter, as defined earlier, involves the study of designs and methods to generate rather than apply knowledge.

Since built environment disciplines are less concerned with research methodology, the second premise is that built environment disciplines have in turn never really developed their own methodology or research designs and methods. Instead, they tend to borrow from other fields (Rapoport, 1973:135; Wachs, 1986:38; Dyck, 1994:143; Amaratunga *et al*., 2002:24-25; Goldstein & Carmin, 2006:69), especially the social sciences (Madsen, 1983:113; Feldt, 1986:37; Dandekar, 2005:130-132).

> Neither planning nor architecture, with their primary orientation to problem-solving activities, has developed unique methodological approaches for the generation of new knowledge. Both fields are eclectic in this respect, borrowing most, if not all, methods for basic and applied research from other fields.
>
> (Dyck, 1994:143)

> Planning scholarship has a history of drawing from many disciplines. These interdisciplinary influences have given rise not only to alternate approaches to problem definition and solution generation but also to notable ontological, epistemological, and methodological variations in planning scholarship . . . The widespread and liberal borrowing of ideas, concepts, and tools from other disciplines is a generally accepted attribute of planning.
>
> (Goldstein & Carmin, 2006:69)

However, Madsen long before alluded to the difficulty of borrowing methods from one field and applying them to another:

> Much of this confusion can be blamed on the social sciences, whose research methodologies form the basis for much planning and policy research. The research techniques of political science, sociology, and economics do not neatly match the questions asked by researchers in these disciplines. It is not surprising, then, that methods often fail to fit the needs of planners.
>
> (1983:113)

Although Madsen seems to suggest that the problem lies in the borrowing of methods from the social sciences, I would rather argue that the problem lies more in a limited understanding on the side of built environment researchers of the applicability of these methods. In fact, many of the "questions asked by researchers" in planning are social science questions, meaning that planning can to some extent be seen as a social science (e.g., see Auster (1989:17-19) and Forsyth (2007:464) about the longstanding relationship between planning and the social sciences). These two premises now serve as a basis for a research problem.

1.2 THE RESEARCH PROBLEM

To summarise the two premises above; firstly, built environment disciplines are primarily applied sciences focusing on the application more so than generation of knowledge, and are consequently less concerned with research methodology. Secondly, owing to this disinterestedness in research methodology, built environment disciplines have never really developed their own methodology, and instead borrow the research designs[3] they use from other fields, especially the social sciences. Yet, the problem is perhaps not so much the borrowing of designs from other fields than a limited understanding on the side of built environment researchers of *what* constitutes a "research design", *which* designs

[3] From this point forward, I mostly use the term "research designs" or just "designs" since it constitutes the object of this study.

are in fact applicable to social research in the built environment, and *when*, *where* and *how* to apply such designs. Thus, instead of developing a unique methodology for built environment disciplines, the problem is actually to find a way of *representing* existing designs in a manner that makes more sense for researchers given the characteristics of social research in the built environment.

1.3 RESEARCH AIM AND OBJECTIVES

1.3.1 Research aim

The aim of this study was to construct a typology of designs for social research in the built environment. The typology had to show a comprehensive range of prototypical designs applicable to social research in the built environment and classify them in terms of important methodological considerations. Currently there is no such a typology for social research in the built environment.

The typology may support lecturers, students, supervisors, researchers, peer-reviewers, practitioners, etc., to have a more articulate, reflexive and critical orientation when designing research to maximise the validity of findings and advance theory, methodology and practice in built environment disciplines.

The study contributes to our understanding of the state of research methodology in the built environment field and of designing social research in the built environment. In addition, the study is the first of its kind in the built environment field, and thus serves as an example of how a metamethodological study can be conducted in this field. The study has a number of additional contributions covered within the more specific research objectives.

1.3.2 Research objectives

In order to construct the typology, the more specific objectives were to:

1. Outline the dimensions of social research (in order to establish a more coherent methodological language for the built environment field and identify methodological considerations as classification criteria);
2. Explore methodological issues in social research in the built environment (in order to provide a better understanding of the difficulties faced by researchers and how a typology of designs may address some of these difficulties);

3. Identify designs applicable to social research in the built environment (in order to see which “designs” to include in the typology and which not);
4. Determine designs used in social research in the built environment (in order to see whether designs identified for inclusion in the typology are used in actual studies); and then to
5. Construct and test the typology (in order to represent designs and to see how well it classified the designs of actual studies).

Each of these five objectives constitutes a chapter in this dissertation. Later in this chapter, I outline the five objectives and the designs and methods used to research each of them. However, the particular designs and methods are discussed in detail within the respective chapters to which they pertain. By now, it should be clear that the object of this study is a typology of designs for social research in the built environment. Yet, what do terms like “typology”, “research design”, “social research” and “built environment” mean in the context of this study?

1.4 DEFINITION OF TERMS

Three terms in the title of the dissertation, namely “typology”, “research design”, and “built environment”, are central to the study and therefore subsequently defined. The term “social research” is defined in the next chapter.

1.4.1 “Typology”

According to Mouton (1996:195) and De Vos (2005a:34-35), scientific knowledge consists of scientific statements (i.e., definitions, hypotheses, and observations), while scientific statements are arranged into conceptual frameworks. Conceptual frameworks in turn refer to the “familiar structures” of science, and include typologies, models and theories. Typologies, models, and theories are therefore different collections of scientific statements about reality. Whether a conceptual framework is primarily a typology, model or theory depends on the regulative function of the framework. The key difference between typologies, models and theories therefore lies in their different *functions*. Thus, I define the term “typology” with specific reference to the function of typologies. I then proceed to define “models” and “theories” as well, so that the difference between them is clear, and so that it is clear what a typology is and what it is not.

A **typology** is a type of conceptual framework in which the regulative function is to **classify** phenomena in terms of certain criteria. Classification is one of the more basic

functions of conceptual frameworks, while both the natural and the social sciences abound with classifications. Well-known examples in the social sciences include classifications such as introverts vs. extroverts, democratic vs. totalitarian, conservative vs. progressive, etc (Mouton, 1996:195).

Mouton (1996:196) summarises the major characteristics of a typology as follows; Firstly, the basic unit of a typology is the *type*, or more specifically, the "ideal type". Max Weber's notion of "ideal types" refers to mental abstractions or pure standards against which we compare reality. As Neuman (2007:432-433) explains, an ideal type is merely a device used for comparison, since reality can never fit the "ideal". It is important to note that ideal types are *abstractions* of reality, meaning that they represent only universal features of a phenomenon whilst excluding particular features.

Secondly, because of abstraction, no ideal type in a typology is ever an exact representation of all characteristics of a phenomenon. As a result, the relationship between the ideal type and the phenomenon, which the ideal type typifies, is one of approximation (Mouton, 1996:196). To use an example applicable to the topic of research design, no actual case study (assuming a case study to be a research design) fits the ideal-type or prototypical case study, while the ideal-type case study can never fully represent the particularities of actual case studies. We can only compare an actual case study against the ideal type to examine the approximation between the actual and ideal case study. Hence, in her text, *Research design: Strategies and choices in the design of social research*, Hakim discusses different designs as ideal types so that "the strengths and weaknesses are outlined with reference to good examples of their kind" (1987:11).

Thirdly, typologies have two criteria for good classifications, namely (1) exhaustiveness and (2) mutual exclusiveness. A typology should include all relevant types of a particular phenomenon (exhaustiveness), and should eliminate overlap between categories through a process of refinement (mutual exclusiveness) (Mouton, 1996:196). Yet, De Vos (2005a:35) points out that although categories are strictly mutually exclusive in taxonomies (the natural sciences' equivalent of typologies), categories in typologies can be permeable, i.e., a phenomenon can sometimes be classified in more than one category. Still, mutual exclusiveness remains a criterion to be strived for in constructing typologies.

Whereas the regulative function of a typology is limited to classification, a **model** is a type of conceptual framework in which the regulative function is one of **heuristics**, with

"heuristic" literally meaning to "discover" or "reveal" (Mouton, 1996:196-197). Whereas a typology represents a static image or cross section of a phenomenon, a model represents a dynamic image by illustrating relationships between major elements of the phenomenon in a simplified form. Yet, a model represents only the broad outline of a phenomenon – emphasising obvious elements whilst excluding obscure ones. Models therefore include the classification function of typologies in addition to their heuristic function by virtue of the fact that they also classify elements of a phenomenon.

A **theory** is a type of conceptual framework in which the regulative function is to **explain** a phenomenon. Kerlinger, for example, defines a theory as "a set of interrelated constructs (concepts), definitions, and propositions that present a systematic view of phenomena by specifying relations between variables, with the purpose of explaining and predicting the phenomena" (1973:9 as cited by Mouton, 1996:198). This definition suggests that theories include the functions of typologies ("set of interrelated constructs") and models ("specifying relations between variables") in addition to their explanatory function. Diagram 1 shows the difference between typologies, models and theories in terms of their functions, with distinguishing functions in bold.

Diagram 1: Functions of typologies, models and theories

<table>
<tr><th>Typologies</th><th>Models</th><th>Theories</th></tr>
<tr><td>Classifying
Categorising</td><td>Classifying
Categorising</td><td>Classifying
Categorising</td></tr>
<tr><td rowspan="2"></td><td>Heuristic
Discovering</td><td>Heuristic
Discovering</td></tr>
<tr><td colspan="2"></td><td>Explanatory</td></tr>
</table>

Source: Mouton and Marais (1996:144)

From Diagram 1 it is clear how typologies differ from models and theories in that their functions are limited to classification and/or categorisation. The typology that this study aimed to construct was therefore limited to a classification of research designs.

1.4.2 "Research design"

The notion of "research design" has been discussed as far back as the 1960s and continues to be discussed in most methodology textbooks. Some prominent texts, such as that by Neuman (2006), focuses on methods rather and consequently do not discuss design as a key activity when planning and conducting research. Leedy and Ormrod

(2010:85-115) devote an entire chapter to the planning of research projects, which they equate with research design. Interestingly, Babbie (2007:86-119) devotes an entire chapter to research design, but does not offer a definition of it.

Moreover, the notion of "research design" is less pronounced in the built environment field, at least in comparison with the social sciences. None of the chapters in a text entitled, *The planner's use of information*, take up the notion of "research design", while the editor (Dandekar, 2003) only briefly discusses research design in the introduction. Similarly, among the authors of 19 chapters in a recent text entitled, *Advanced research methods in the built environment* (Knight & Ruddock, 2008) (eds.), only Dainty and Hughes address the notion of "research design". Although these are only two examples, an overview of methodological literature and research articles in the built environment field reveals very much the same.

It is perhaps strange that the notion of "research design" is less pronounced in the built environment field, since it should be natural for built environment researchers to want to "design" their research. Groat and Wang also think that the notion of "research design" should be commonsensical to design disciplines, yet, for another reason:

> The term *research design* is one that is particularly appropriate for a readership trained in architecture and/or other design disciplines. In architecture, we often speak of a "parti" when describing the formal organizing concept of a design scheme. Similarly, we often refer to a variety of formal "types" – such as a courtyard form or nine-square plan – that specify generic spatial relationships. The important point is this: Just as a courtyard can be used for such varied purposes as college dorms, houses, museums, or office buildings, so too a given research design can be employed for a variety of topic areas of architectural research.
>
> (2002:12)

Nevertheless, what does "research design" mean in the context of this study? Selltiz *et al.* define "research design" as "the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure" (1965:50 as cited by Mouton & Marais, 1996:32). The distinction made earlier between research design and method is evident in this definition in that research design ("arrangement of conditions") *precedes* methods ("collection and analysis of data"). Selltiz *et al.*'s definition also suggests that research design is primarily about the *purpose* of research, but that research design is also linked ("combine[d]") with practical considerations ("economy in procedure").

Two more recent definitions by De Vaus and Robson reiterate Selltiz *et al.*'s definition that research design is primarily about the research purpose or, more specifically, about the research *questions*. "The function of a research design is to ensure that the evidence obtained enables us to answer the initial question as unambiguously as possible" (De Vaus, 2001:9). "Design is concerned with turning research questions into projects . . . The general principle is that the research [design] must be appropriate for the questions you want to answer" (Robson, 2002:79). These three definitions therefore make a strong link between the design of a study and its purposes/questions. Yet, they are still not exactly clear about what exactly "research design" means. Others provide fuller definitions:

> Design is the logical sequence that connects the empirical data to a study's initial research questions and, ultimately, to its conclusions. Colloquially, *a research design is a logical plan for getting from here to there*, where *here* may be defined as the initial set of questions to be answered, and *there* is some set of conclusions (answers) about these questions. Between "here" and "there" may be found a number of major steps, including the collection and analysis of relevant data.
>
> (Yin, 2003:20)

> A research design provides a framework for the collection and analysis of data. A choice of research design reflects decisions about the priority being given to a range of dimensions of the research process . . . Research designs are broad structures that guide the execution of a specific research method and the analysis of the subsequent data.
>
> (Bryman & Teevan, 2005:24)

> Research designs are plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis . . . Research design, which I refer to as the plan or proposal to conduct research, involves the intersection of philosophy, strategies of inquiry, and specific methods.
>
> (Creswell, 2009:3 & 5)

Yin's definition reiterates the point earlier about the link between the design of a study and its questions, but also takes it further by specifying the link, namely the link between *empirical data* and research questions. Research design therefore ensures a link between methods (data collection, analysis and interpretation) and questions (conclusions). More importantly, all three the latter definitions introduce an additional point, namely that of research design as a plan, framework, structure, or procedure for

research. This point is often found elsewhere in the literature in the form of an analogy in which research design is compared to an architect's blueprint for a building, while methods are compared to the actual construction of the building (e.g., see Hakim, 1987:1; Hedrick *et al*., 1993:39; Mouton, 1996:107; Babbie & Mouton, 2001:74; Robson, 2002:80; Leedy & Ormrod, 2010:85). Given the analogy of the architect's blueprint, it is again ironic that the notion of "research design" is less pronounced in the built environment field. Nevertheless, the notion of "research design" as "a logical plan" for research, or something to that effect, seems well established.[4]

I specifically choose Yin's term "logical plan" for two reasons. Firstly, "logics" presents an important criterion for distinguishing between different designs – which I do later in the study – and secondly, because "plan" is a sufficiently generic term that is also synonymous with design, whereas terms such as "framework" or "strategy" often have different connotations in social research. Moreover, the notion of design being synonymous with planning comes to the fore in Leedy and Ormrod (2010:85) when they define "research design" as "the overall structure for the procedures the researcher follows, the data the researcher collects, and the analyses the researcher conducts. Simply put, research design is *planning*."

The definitions of Bryman, Teevan, and Creswell introduce yet another point, namely that design involves decisions that a researcher has to make regarding various considerations across the dimensions of social research, including decisions about research paradigms, research approaches, etc (or "philosophy" and "strategies of inquiry" to use Creswell's terms). However, I discuss the dimensions of social research and their methodological considerations in detail in Chapter 2. Suffice to say at this point that design involves

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4 The idea of research design as a *logical plan* becomes particularly important considering two points made so far, namely, that "design" is something different to "methods", and that design connects methods with questions in a logical manner. Others also emphasise these points:

> Research design is different from the method by which data are collected. Many research methods texts confuse research designs with methods. It is not uncommon to see research design treated as a mode of data collection rather than as a logical structure of the inquiry. But there is nothing intrinsic about any research design that requires a particular method of data collection. Although cross-sectional surveys are frequently equated with questionnaires and case studies are often equated with participant observation . . . data for any design can be collected with any data collection method . . . How the data are collected is irrelevant to the *logic* of the design.
>
> (De Vaus, 2001:9)

> Research design is much more than a work plan. The main purpose of the design is to help avoid a situation in which the evidence does not address the initial research questions. In this sense, a research design deals with a *logical* problem and not a *logistical* problem.
>
> (Yin, 2003:21)

strategic decisions to ensure functional coherence between various methodological considerations in a study.

Surprisingly few authors refer explicitly to the aim of research design itself. Hedrick *et al.* (1993:39-40) and Mouton (1996:107), however, clearly say that the aim is to maximise the validity of findings. On a philosophical level, we design research in such a way so that the findings will be a reasonable approximation of reality. The criteria for this "reasonable approximation" will of course depend on one's methodological paradigm and approach and will differ from project to project. On a project level, "validity" refers to the extent to which the research is accurate, meaningful and credible. "Reliability", a term often used in conjunction with validity, refers to the extent to which the research is consistent and coherent.

To summarise the different points from the discussion thus far:

- Research design is a plan based on a particular logic;
- Research design involves strategic decisions about various methodological considerations across the dimensions of social research; and
- Research design aims to maximise the validity of findings.

How, then, is "research design" defined in the context of this study? The three points summarised above can be synthesised into the following definition: *Research design is a logical plan involving strategic decisions with the aim of maximising the validity of findings*. The last term in the title of the dissertation, namely "built environment", can now be defined.

1.4.3 "Built environment"

The term "built environment" is not a definitive term in the literature yet, although it is emerging (e.g., see Knight & Ruddock, 2008 (eds.)). However, the term is increasingly being used as a collective noun for disciplines dealing with the built environment, as is evident from subject-area classifications on academic databases and university websites. A cursory overview of university websites shows the term being used for schools or faculties consisting of departments of (1) architecture (including its subfields of interior and landscape architecture), (2) construction management and economics, (3) urban

design, and (4) planning.[5] "Built environment" may also refer to crosscutting fields such as housing and real estate.

In this study, "built environment" refers to (1) architecture, (2) urban design, and (3) planning, but not construction management and economics, nor housing or real estate. This is because these three disciplines together constitute a more or less cohesive field. They have a stronger focus on social research compared to construction management and economics, while all three are professional disciplines, whereas housing and real estate are not. Moreover, urban design is often seen as the link between architecture and planning, while the spanning of research across them is evident in interdisciplinary journal titles like *Journal of Architectural and Planning Research*, *Urban Studies*, *Urban Affairs Review*, etc. Having defined all three terms in the title of this study, I now discuss the research design and methods of the study itself, i.e., how the typology was constructed.

1.5 RESEARCH DESIGN AND METHODS OF THE STUDY ITSELF

Since this study is not an ordinary empirical enquiry into an object in the (so-called) real world, it is necessary to be clear on what type of study this is before explicating its design. To consider this, it is useful to refer to Mouton's "three worlds" framework as shown in Diagram 2 below.

Diagram 2: The "three worlds" framework

World 3: Meta-science (Critical interest)	
Philosophy of science Research methodology	Sociology and history of science Research ethics
↓	
World 2: Science (Epistemic interest)	
Scientific knowledge Scientific disciplines	Scientific research
↓	
World 1: Everyday life (Pragmatic interest)	
Social and physical reality Multiple worlds	Lay knowledge

Source: Mouton (2001:139)

5 "Planning" is also known as "town and regional planning" in South Africa, "town and country planning" in the UK, or as "urban and regional planning" in the US.

World 1 represents the world of everyday life and lay knowledge in which people use their wisdom, commonsense, skills, etc., for pragmatic interests, i.e., to life in the "real" world. World 2 represents the world of science and scientific knowledge, where one goes beyond World 1 to conduct research about an object in World 1 for epistemic interests, i.e., to understand the "real" world. The majority of research, including doctoral dissertations, evidently belongs to World 2. World 3 represents the world of meta-science[6] where one goes beyond World 2 to critically examine, or in the case of this study, to classify objects in World 2, including research designs. Hence, I defined "research methodology" earlier as the study of research designs and methods.

Considering the "three worlds" framework, it is clear that this study is located in World 3 – specifically in the discipline of research methodology. The study thus constitutes a "metamethodological" type of study since it studies methodological objects in World 2, i.e., research designs. Since studies in World 3 are mostly nonempirical, i.e., they do not really engage with empirical reality in World 1, they typically conform to a metaresearch design. Without pre-empting the construction of the typology, suffice to say here that metaresearch differs quite substantially from other empirical designs in that metaresearch are beyond many of the considerations applicable to empirical designs, such as which paradigm to work in (e.g., positivist or interpretative), which approach to follow (e.g., quantitative or qualitative), etc.

However, the term "metaresearch" is broad while most studies in World 3 necessarily conform to metaresearch. It is therefore necessary to identify a subtype of metaresearch to explicate this study's design. Since the aim of this study was to construct a typology, the overall design of this study was the construction of a typology. Again, without pre-empting the typology, suffice to say that other metaresearch subtypes typically include literature review, conceptual analysis, theory construction, etc. Although the overall design of this study was the construction of a typology, I used other designs to research the objectives listed earlier. Table 1 shows an outline of the research objectives with their respective designs and methods.

6 Hence, the prefix "meta", which is Greek for "beyond" or "over".

Table 1: Outline of research objectives, designs and methods

Research objectives	Research designs	Research methods
1. Outline the dimensions of social research	Literature review (theoretical)	Review of prominent methodology texts. Outline dimensions by identifying and discussing important methodological considerations in terms of research design
2. Explore methodological issues in social research in the built environment	Survey of theses and quantitative content analysis of their stated methodologies	Survey of a random sample of built environment theses at South African universities. Quantitative content analysis of their profile and methodological characteristics in SPSS using descriptive and inferential statistics
3. Identify designs applicable to social research in the built environment	Literature review (typological)	Desktop literature search and assembling of sources using spreadsheets. Indexing, clustering, and outlining of designs discussed within sources
4. Determine designs used in social research in the built environment	Survey of journal articles and quantitative content analysis of their stated methodologies	Survey of all cited social research articles between 1996 and 2005 in an architectural, urban design and planning journal. Quantitative content analysis of their profile and methodological characteristics in SPSS using descriptive and inferential statistics
5. Construct and test the typology	Typology construction	Classify designs identified in Objective 3 using methodological considerations identified in Objective 1. Test the typology using data from Objective 4 (goodness of fit between the typology and the designs of actual studies)

Table 1 shows that, in addition to the overall design of constructing a typology, I also used two literature reviews and two sets of surveys and content analyses to research the first four objectives. The main methods employed in each design are briefly mentioned in Table 1, while, as mentioned before, I discuss each objective's design and methods in detail within subsequent chapters.

Typologies can be constructed either in an abstract way, i.e., classifying objects in terms of what the world "ought to look like", or in a concrete way, i.e., classifying objects in terms of what the world "really looks like". In this study, I used both ways. Firstly, I defined "research design" conceptually and identified designs from the literature that ought to be used in social research in the built environment. Secondly, I determined whether those

designs are used in actual studies in the built environment, and then classified designs considering their prototypical features as well as the relationships between the designs and methodological characteristics of actual studies.

The overall mode of reasoning in this study therefore included a combination of deductive and inductive reasoning between conceptual and empirical components. While concepts constantly informed data collection, analysis and interpretation, data and findings constantly led to a refinement of concepts. For example, the definition of "research design" and outline of the dimensions of social research informed the way the methodological content of theses and journal articles were coded, analysed and interpreted. In turn, the relationships between the designs and methodological characteristics of journal articles served to test and refine the conceptual classification of designs. This concludes the summary of the design and methods of the study itself, while detailed discussions follow in subsequent chapters.

1.6 RATIONALE FOR THE STUDY

This section discusses the rationale for the study in terms of (1) the focus on research *design*, and (2) the construction of a *typology* of designs.

1.6.1 Why focus on research *design*?

This subsection puts forward three reasons for a focus on design as opposed to methods in general. The first reason is that the notion of "research design" remains relatively unknown (or at least ill considered) in the social sciences and particularly in built environment disciplines. Initially, research design used to be associated with classical experiments in which design was primarily about the control of variables (Mouton & Marais, 1996:32-33). Design later on also became associated with surveys due to refinements in sampling techniques requiring additional control measures. Yet, if we consider the definition earlier of research design as a logical plan involving strategic decisions with the aim of maximising the validity of findings, then it becomes clear that design nowadays extends well beyond issues of control to include issues of planning, logic and decision-making.

Yet, the act of consciously designing a study before delving into empirical reality still seems relatively ill considered in social research, especially in the built environment. Hakim (1987:1-2) provides two explanations for this. The first explanation is that research design, or the "design function" as she terms it, is generally invisible in smaller projects

since individual researchers tend to revise their initial plans as their research unfolds. Research design only came to the fore with the advent of larger applied research projects where research had to be planned to accommodate research teams and multiple research purposes. The second explanation is that design issues rarely arise in certain disciplines because of their specialisation in one or two designs. Economics, for example, tends to specialise in secondary data analysis. Anthropology tends to specialise in ethnography, while certain subfields of psychology tend to specialise in experiments. Sociology is perhaps the best example of a discipline that uses a range of designs.

Yet, built environment disciplines do not specialise in any particular design. Instead, research design remains relatively ill considered in built environment disciplines simply because of the weak standing of research methodology and because of a limited focus on design in many methodology textbooks in the social sciences, let alone those in the built environment field (see earlier remarks). Textbooks instead tend to focus on the implementation of methods, as noted by Hakim:

> Methods textbooks are concerned primarily with the researcher's tasks, the work that will have to be done, the techniques to be used and problems that may be encountered – all with a view to offering guidelines for action. Although some discussion of research design may be offered, the focus is generally on the implementation stage, the procedures and tasks for translating the initial idea into a plan of action.
>
> (1987:8)

Thus, a focus on research design may increase our awareness and understanding of it as an important act in the broader research process over and above other methodological considerations. Moreover, a study about research design may provide a basis for a stronger focus on design in methodology textbooks – both in the social sciences and built environment disciplines.

The second reason for a focus on design is that any study arguably requires a design, i.e., a logical plan, before implementing methods that are more detailed. Research projects are in some ways more complicated than real-world projects since they bridge Worlds 1 and 2 (see Diagram 2) whilst having to balance scientific rigour with resource limitations. Moreover, increasingly sophisticated information and communication technologies, including computer programmes for collecting, analysing and interpreting quantitative and qualitative data, nowadays present a researcher with overwhelming possibilities in terms of methods. Without an appropriate design, a researcher may easily

lose track of the logic of a study and consequently fail to produce findings that answer the initial questions. It is therefore sensible for a researcher first to identify an appropriate design considering the research questions, resource limitations, etc., and then to stick to methods that fit the design. As Hakim explains:

> Design deals primarily with aims, uses, purposes, intentions and plans within the practical constraints of location, time, money and availability of staff . . . Methods . . . are about how to get there, once the goal is defined or chosen . . . Imagination can range more freely, and creativity is most fruitful, when the more essential aspects of research design have been tackled and got under control if not out of the way. It is difficult to think about doing a case study if one is constantly reconsidering whether a case study is the most appropriate design in the first place.
>
> (1987:1&13)

Thus, a focus on design may serve to emphasise the distinction between design and method, and support researchers to identify an appropriate design before implementing detailed methods. In turn, researchers may save resources by avoiding methods that will not contribute to the production of valid findings.

The third reason for a focus on design is that it deals with practical considerations in addition to maximising the validity of findings. In fact, dealing with practical considerations may well be to maximise the validity of findings. Mouton and Marais thus described one of the functions of design as “aligning the pursuit of a research goal with the practical considerations and limitations of the project” (1996:32). For example, if our goal is to generalise about a specific population, do we have the means to survey a representative sample of that population given our limited resources, or if our goal is to attribute causality between two variables, can we control for all possible extraneous variables?

Design may also contribute to the management of research projects. Hakim comments that a proposal, which demonstrates the feasibility of a project through a carefully worked out design, is more likely to attract funding and convince specialists of their role and contribution to the project (1987:13). This is particularly important nowadays considering the increased specialisation and division of labour in the social sciences. Researchers nowadays require greater clarity as to how exactly their specialisation will fit into a project.

Moreover, the recent global economic recession is likely to raise renewed questions about the merits of research. We are likely to see a shift from grant-funded towards

contractual research in which there will be increasing emphasis on the relevance, feasibility, and cost efficiency of research. Thus, a focus on design may make researchers more aware of the increasing need to align research goals with practical considerations, including relevance, feasibility and cost efficiency.

This subsection provided three reasons for a focus on design as opposed to methods in general. Yet, why construct a *typology* of designs?

1.6.2 Why construct a *typology* of designs?

Earlier on, I defined a typology as a type of conceptual framework that aims to classify or categorise different types of a phenomenon. In addition to research design itself, this study is also interested in classifying different types of designs for social research in the built environment. Ever since the emergence of the mixed-method approach in the social sciences, methodologists in the field of mixed-method research have been constructing typologies of designs featuring mixed-methods. Teddlie and Tashakkori, two prominent authors in the field, mention five benefits of constructing typologies of designs.

> - Typologies help researchers decide how to proceed when designing their MM [mixed methods] studies. They provide a variety of paths, or ideal design types, that may be chosen to accomplish the goals of the study.
> - Typologies of MM research designs are useful in helping to establish a common language for the field. For instance, Morse's (1991, 2003) typology of MM research designs includes notations and abbreviations still used today.
> - Typologies of MM designs help to provide the field with an organizational structure. At this point in time, given the range of existing MM typologies, it is more accurate to say that such typologies provide the field with multiple alternative organizational structures.
> - Typologies of MM designs help to legitimize the field because they provide examples of research designs that are clearly distinct from either quantitative (QUAN) or qualitative (QUAL) research designs.
> - Typologies are useful as a pedagogical tool. A particularly effective teaching technique is to present alternative design typologies and then have the students discuss their strengths and weaknesses.
>
> (2006:12)

Typologies of designs evidently have a number of benefits in the field of mixed-method research. Considering some of these benefits, as well as the current standing of research methodology in the built environment field, I discuss four possible benefits of constructing

a typology of designs for social research in the built environment, including: (1) greater clarification, (2) improved teaching, (3) improved decision-making, and (4) methodological reflection.

1.6.2.1 Greater clarification

The built environment field currently has an incoherent methodological language in the form of incorrect and inconsistent usage of concepts and terms. This incoherency contributes toward confusion and misunderstandings between students and supervisors, researchers and clients, authors and peer-reviewers, etc. Currently there seems to be little or no effort to establish a more coherent language.

Some authors regard certain designs as prototypical, while others do not. Sometimes authors call designs one thing and sometimes another. Sometimes certain methods are elevated to the level of design, sometimes not, and so on. Although authors of course write for different purposes and audiences, this does not change the fact that designs and methods have prototypical features.

Examples from three methodology textbooks in the built environment field may serve to illustrate these criticisms. In their text, *Architectural research methods*, Groat and Wang (2002) regard "qualitative research" as a design together with experiments, case studies, etc. Yet, most methodologists regard qualitative research as an *approach* that encapsulates a range of qualitative designs, including case studies. They also substitute terms that are widely used by prominent methodologists, such as "methodological paradigms", "designs", and "methods", for terms such as "systems of inquiry", "strategies", and "tactics" respectively (2002:10-11). Yet, at the same time, they indicate that they use the terms "research design" and "research strategy" interchangeably (2002:11). However, the term "research strategy" is associated with notions of quantitative vs. qualitative research (e.g., see Bryman & Teevan, 2005:14-16; De Vos, 2005b:357-366; Neuman, 2006).

In their text, *Qualitative analysis for planning and policy*, Gaber and Gaber refer to "full participation" or participatory action research as a method within field studies (2007:31). Yet, methodologists nowadays regard participatory action research as a standalone design, or a distinctive type of research at least, while the term "field studies" is actually synonymous with designs such as ethnography and phenomenology. Wang and Vom Hofe titled their text *"Research methods in urban and regional planning"* (2007), giving the impression that it deals with methodology in general in all of planning research. Yet,

the text focuses exclusively on methods for intervention and evaluation research in applied contexts.

As mentioned before, the distinguishing function of a typology is classification. By systematically classifying designs, we may achieve greater clarification in terms of what constitutes (1) a research *design*, (2) *applicable* designs for social research in the built environment, and (3) appropriate names for different designs. These clarifications, together with a single typology that classifies designs in terms of methodological considerations, may also help to establish a more articulate and coherent methodological language for the built environment field.

However, the typology is not meant to be a grand narrative of research design, nor a universal benchmark for methodological concepts and terms. It is meant, amongst other things, to clarify and standardise existing concepts and terms that are currently being used incorrectly and/or inconsistently in social research in the built environment. Yet, it is also about customising a methodological language for the built environment field by putting forward and establishing concepts and terms that are more appropriate for the field. A more customised and coherent methodological language may contribute towards greater success in terms of approval of proposals, publication and citation of reports and articles, etc.

1.6.2.2 Improved teaching

The built environment field currently has no textbook that deals specifically with research design, let alone identifying and discussing designs applicable to social research in the built environment (see earlier remarks). Students in built environment programmes typically do methodology courses through social science departments or use textbooks that are not always applicable to their field. Moreover, many of these textbooks themselves do not adequately deal with research design, instead focusing on methods. Hakim therefore included the following in the introduction to her text on research design:

> There is already a vast literature on particular research techniques and methods. Despite variations in content and style, they have in common a focus on how to do research and the technical details, with occasional forays into the philosophy of knowledge. The focus here is not on *how* to do any type of research, but *when and why* any particular type of study should be chosen for a project.
>
> (1987:2)

The typology may therefore provide a basis for a future methodology textbook in the built environment field. Such a textbook can then immediately elaborate on different prototypical designs and their associated methods, without first having to legitimise different designs or rectify and standardise concepts and terms. Alternatively, lecturers may use the typology directly as a pedagogical tool to introduce students to a concise yet comprehensive range of prototypical designs and their associated methodological considerations. As Teddlie and Tashakkori (2006:12) point out, such a typology may then help students to discuss the strengths and weaknesses of different designs. Students may then also sort out issues of design up front, allowing them to concentrate on issues of method during their fieldwork. Ultimately, the typology may contribute towards an improvement in the methodological rigour of built environment theses, and consequently increased throughput rates of postgraduate students.

1.6.2.3 Improved decision-making

Too often built environment researchers choose a design that is incompatible with the research purpose or question, irreconcilable with their own or their audience's philosophical assumptions about reality and knowledge, or unrealistic in terms of resources, etc. Alternatively, too often researchers consider a paradigm, approach, or source of data, etc., that is not associated with the design they are required to use. Although researchers often make compromises, and they should, there must be at least *some* coherence between a project's design and its more important methodological characteristics.[7] However, an incongruence between design and methodological characteristics often contribute towards students not completing their theses, researchers not achieving their objectives, or worse, the production and dissemination of invalid findings, etc.

Kaufman long ago indicated that the task of research methodology is to establish a "theory of correct scientific decisions" (1944:230 as cited by Mouton, 1984:101).[8] Therefore, we can view the task of this study as the construction of a typology for "correct scientific decisions" with regard to social research in the built environment. A typology that will (1) show applicable designs, (2) outline them in terms of their subtypes,

7 Hughes makes a similar point by saying that "there are traditions in different types of work and if a phenomenological or ethnographic approach is being adopted, then the author should take this stance clearly and confidently and not try to dress it up in hypothetico-deductive clothes!" (2008:196-197)

8 More specifically, "the major aim of methodological analysis is to develop a more critical orientation on the part of researchers by eliminating obviously incorrect decisions and, in so doing, maximize the validity of the research findings" (Mouton & Marais, 1996:16).

specialised subtypes, and areas of application in built environment research and practice, and (3) classify them in terms of key methodological considerations, will certainly contribute towards, maybe not so much “scientific”, but more considered and appropriate decisions. Alternatively, the typology will help a researcher to anticipate key methodological considerations upon the choice of a design to maximise the validity of findings.

As Teddlie and Tashakkori (2006:12) pointed out, typologies help researchers decide how to proceed when designing their studies. A typology of designs for social research in the built environment will already help researchers in built environment disciplines just by presenting them with a range of prototypical designs – an option that currently does not exist. Researchers will be able to make decisions quicker and more confidently without having to spend additional time and effort cross-referencing different textbooks to try to identify and familiarise themselves with an applicable design.

1.6.2.4 Methodological reflection

The advancement of any discipline depends on the extent to which its theory and methodology are advanced. However, in order to advance a particular discipline’s methodology, methodologists in that discipline continuously need to reflect on their existing paradigms, approaches, designs and methods. Yet, for this, they require coherent frames of reference. A typology of designs provides such a frame of reference for critical reflection on designs. It helps methodologists to compare different prototypical designs with each other and to re-examine their methodological considerations. Alternatively, methodologists and researchers alike can use it as an instrument to review the methodologies of existing studies.

As argued earlier, it also provides a more coherent methodological language, which in turn contributes toward further methodological debate and discourse within a discipline. This is particularly applicable to the built environment field considering the underdeveloped state of research methodology in this field. Of course, the typology itself also stands open to further analysis and revision.

1.7 DELIMITATION OF THE STUDY

Research in the built environment is incredibly diverse and includes social and physical/technological objects of study, etc. This study, however, was limited to research on social objects in the built environment. Yet, the study viewed “social objects” or social

research in a broad sense. It included people (and all their collectives, artefacts, actions, etc.), the interaction between people and the built environment (i.e., environment-behaviour studies), the built environment itself (as far as it was researched as a social artefact), and planning and design itself (including all its facets such as different approaches, interventions, methods, etc). Chapter 2 discusses the objects of social research in the built environment in more detail. Suffice to say that the conception of "research" in this study, therefore, did not include environmental, transportation, construction research, etc.

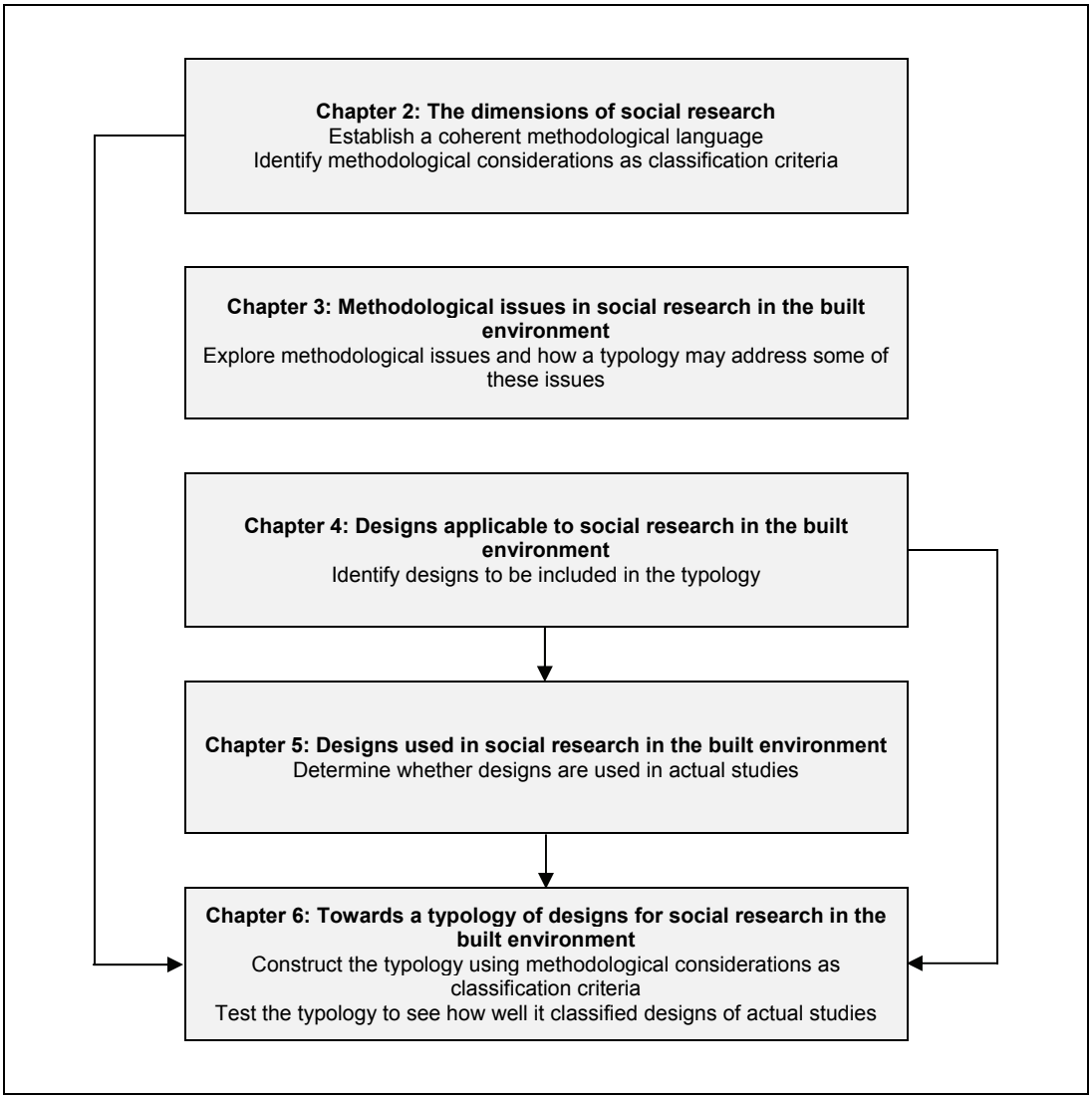
1.8 CHAPTER OUTLINE

As indicated before, each of the five research objectives listed earlier constitutes a chapter in this dissertation. I therefore recapitulate these objectives.

Chapter 2 outlines the dimensions of social research in order to establish a more coherent methodological language for the built environment field and to identify methodological considerations as classification criteria. **Chapter 3** explores methodological issues in social research in the built environment in order to provide a better understanding of the difficulties faced by researchers and how a typology of designs may address some of these difficulties. **Chapter 4** identifies designs applicable to social research in the built environment in order to see which "designs" to include in the typology and which not. **Chapter 5** determines designs used in social research in the built environment in order to see whether designs identified for inclusion in the typology are used in actual studies. **Chapter 6** constructs and tests the typology in order to represent designs and to see how well it classified the designs of actual studies. **Chapter 7** concludes the dissertation.

Diagram 3 shows a graphical chapter outline to show how the five main chapters link with each other in terms of their objectives.

Diagram 3: Chapter outline



Chapter 2 The dimensions of social research

2.1 INTRODUCTION

Chapter 1 indicated that research design involves strategic decisions about various methodological considerations across the dimensions of social research. Yet, what are these "dimensions", and more specifically, what are the more important methodological considerations across the dimensions that influence research design? Furthermore, how may these considerations contribute towards a classification of designs applicable to social research in the built environment?

Neuman describes the dimensions as "decision points for a researcher when moving from a broad topic to a focussed research question to the design of a specific study" (2006:23). Conversely, Bryman and Teevan say, "a choice of research design reflects decisions about the priority being given to a range of dimensions of the research process" (2005:24). Yet, these two quotes only allude to the notion of "dimensions", but do not specify any particular dimensions. Social research is no doubt a complex endeavour, involving different audiences and stakeholders, societal and institutional expectations and agendas, underlying philosophies and assumptions about reality and knowledge, and different (sometimes competing) ways of doing research. So how can we identify the dimensions of social research in a more abstract yet simplified manner?

One way of doing so is to consider a comprehensive definition of "social research". Mouton and Marais define social research as "a collaborative human inquiry in which social reality is studied objectively with the aim of gaining a valid understanding of it" (1996:7-8). From this definition, they identify:

- A **sociological** dimension: social research is a *collaborative* activity, involving different people, social interactions, norms and values, etc.;
- A **teleological** dimension: social research is an intentional or purposeful activity, its fundamental premise being the *understanding* of social reality;
- An **ontological** dimension: social research is directed at *social reality*, albeit with different philosophies and assumptions thereof;
- An **epistemological** dimension: social research is aimed at a *valid* understanding of social reality, albeit with different philosophies and assumptions about what constitutes a "valid" understanding; and

- A **methodological** dimension: social research is *objective* – not in a positivist sense, but by virtue of it being unbiased, systematic, and controllable.

It is important to note that these dimensions are, as Mouton and Marais point out, "five aspects of the same process" (1996:8). Therefore, although I discuss them separately here, in reality they are interrelated aspects of the same process.

The objective of this chapter is to outline the dimensions of social research. The more specific objectives are to (1) identify and discuss methodological considerations in each dimension that influence research design, and (2) clarify how these considerations may contribute towards a classification of designs. In addition, the chapter clarifies and standardises methodological concepts and terms used in this dissertation. The contribution of this chapter therefore consists in providing (1) a better understanding of the dimensions of social research and how they relate to social research in the built environment, (2) a theoretical lens, i.e., a five-dimensional framework through which to conduct methodological analyses (not just in this dissertation, but in other methodological studies as well), and (3) a more coherent methodological language for the built environment field.

2.2 RESEARCH DESIGN AND METHODS USED IN THIS CHAPTER

The research design constituted a literature review that was primarily theoretical, i.e., prominent methodology texts were read with a view to outline the dimensions of social research. The review was structured around the five dimensions listed above, while each dimension was outlined by identifying and discussing their more important methodological considerations in terms of research design.

2.3 FINDINGS

Findings are presented by outlining the (1) sociological, (2) teleological, (3) ontological, (4) epistemological and (5) methodological dimensions of social research.

2.3.1 The sociological dimension

The sociological dimension pertains to the societal or collaborative aspects of doing research. The sociology of science, for example, studies scientific norms and values, research cultures, practices and ethics, social interactions between researchers and other role-players, etc. The most important methodological consideration in the sociological dimension in terms of research design is probably the context in which we

conduct research. This is particularly so for social research in the built environment considering the applied nature of built environment disciplines. I therefore discuss "research contexts" as the first methodological consideration influencing research design.

Studies, particularly those in the built environment field, tend to fall on a continuum ranging from "basic" to "applied" contexts. According to Hedrick *et al*. (1993:2-11), basic and applied research differ in terms of three criteria, namely (1) purpose, (2) context and (3) method, with "context" probably being the most distinguishing criterion. Basic research is typically for theoretical aims or creating new knowledge, conducted in the context of universities or institutions of similar academic stature, and using methods in which there is a high premium on the validity and reliability of findings. Applied research, on the other hand, is typically for practical or problem-solving aims, conducted in the context of private practice, government, or similar non-academic contexts, and using methods in which validity and reliability are coupled with criteria such as flexibility, participation, time and cost-efficiency, etc (e.g., see Hedrick *et al*., 1993:2; Neuman, 2006:24-25).

In terms of the "three worlds" framework presented in Chapter 1, researchers conduct both basic and applied research in World 2. Basic research increases our intellectual understanding about a phenomenon in World 1, whereas applied research, as the term indicates, *applies* the theory and methods of basic research to clarify and solve a real-life problem in World 1. However, Hedrick and his co-authors overlooked a key distinguishing criterion, namely the audience for which the research is intended. Basic research is typically for an academic audience whilst evaluated by peers in a respective field, whereas applied research is for a practitioner or decision-making audience whilst evaluated in terms of the practical utility of findings. Nevertheless, methodologists compare the two contexts along different criteria. Table 2 shows Neuman's comparison in terms of seven criteria, which I deem to be generic yet important ones considering social research in the built environment.

Table 2: Comparison between research contexts

Criteria	Research contexts	
	Basic	**Applied**
Primary audience	Scientific community (other researchers)	Practitioners, participants, or supervisors (nonresearchers)
Evaluators	Researcher peers	Practitioners, supervisors
Autonomy of researcher	High	Low-moderate
Research rigour	Very high	Varies, moderate
Highest priority	Verified truth	Relevance
Aim	Creating new knowledge	Solving practical problems
Success indicated by	Publication and impact on knowledge/scientists	Direct application to address a specific concern/problem

Source: Neuman (2006:26)

It is important to note that the basic vs. applied dichotomy is an oversimplification, especially in the context of social research in the built environment. Because of the problem-solving nature of built environment disciplines, actual problems in the built environment often become the object of theory and discourse. Examples in South Africa include gated communities, poor services delivery, exacerbation of the apartheid city through low-cost housing projects on urban peripheries, etc. Consequently, the object of basic research often happens to be an actual problem in the built environment or a problem in planning and designing practices. Studies driven by curiosity as opposed to concern are sometimes closer to each other than we think, while the distinction between basic and applied research becomes fuzzy in the built environment field.

Regarding the social work profession, Fouché and De Vos also say that “in practice, the goals of pure and applied research overlap. Many supposedly pure research findings (especially in the area of human relations) have practical implications. Conversely, most applied research findings have implications for knowledge development” (2005a:105-106). It is therefore important to see the basic vs. applied dichotomy as a continuum and that the dichotomy itself does not account for variations in basic and applied research. As Neuman indicates:

> The basic versus applied research dichotomy is simplistic and ignores three related features: (1) the form of knowledge created, (2) various audiences that use research findings, and (3) whether a study is initiated, designed, and controlled by an independent researcher or others who may be nonresearchers.
>
> (2006:31)

Neuman then presents a second more detailed comparison subsequent to the one above in which he shows variations of basic and applied research considering the "three related features" (2006:33). However, I do not show Neuman's second comparison since it does not hold further implications for classifying designs other than what the basic vs. applied dichotomy already does. Suffice to conclude that the basic vs. applied dichotomy represents two ideal-type research contexts and that social research in the built environment is likely to conform to variations of basic or applied research.

The basic vs. applied dichotomy somehow resembles the Gibbons *et al*. (1994) thesis of Mode 1 vs. Mode 2 knowledge production. "Mode 1" refers to traditional forms of knowledge production in universities and similar institutions and is therefore synonymous with basic research. "Mode 2" refers to newer forms of knowledge production in contexts of application, typically outside the traditional university. It differs from applied research, however, in that the emphasis is on knowledge production for strategic or innovation purposes rather than information generation for societal problem solving – even though both take place in contexts of application. Mode 2 is typically associated with specialised knowledge and supply and demand factors. Moreover, Mode 2 research usually contributes to a body of knowledge, whereas applied research usually does not.

Whereas smaller consultancies and governmental research offices typically conduct applied research, specialised NGOs, larger parastatals, and corporations (especially multi-national ones), typically conduct Mode 2 research. Since built environment disciplines are more, although not exclusively, involved with the public domain rather than the market domain of innovation and strategy, the Gibbons thesis is arguably less applicable to social research in the built environment compared to the basic vs. applied dichotomy. I therefore do not consider the Mode 1 vs. Mode 2 dichotomy as a possible classification criterion for designs.

Returning to the basic vs. applied dichotomy, the question now is, how do the two contexts influence research design, and how may "research context" serve as a possible classification criterion for designs?

> To a far greater extent than theoretical research, policy research is *multi-dimensional* (Majchrzak, 1984:18). There is greater propensity towards multi-method studies and research programmes owing to the political pressures to get a fully rounded and balanced picture on any topic. Even single projects need to cover any conflicting interests that arise in any issue. And research designs must often be multi-level. . . .

> The need for a comprehensive picture in policy research leads to preference for studies that are *nationally representative*, or else permit extrapolation to the national level. In contrast, a great deal of theoretical research is carried out with small local studies, the results of which cannot easily be generalised.
>
> (Hakim, 1987:4-5)

> In sum, the world of applied research often has more numerous and varied purposes, its context is less controllable, and its methods are more varied and more complex than research conducted in laboratory settings (Bickman & Henchy, 1971). These features make research planning [design] activities especially critical. Although basic and applied research share a strong need for research planning [design], it easily can be argued that, given the greater complexity of the applied context, planning [design] skills are even more important for applied researchers than for basic researchers.
>
> (Hedrick *et al*., 1993:11)

> Applied and basic researchers adopt different orientations toward research methodology. Applied researchers make more trade-offs. They compromise scientific rigor to get quick, useable results . . . Applied researchers squeeze research into the constraints of an applied setting and balance rigour against practical needs. Such balancing requires an in-depth knowledge of research and an awareness of the consequences of compromising standards.
>
> (Neuman, 2006:26)

Hakim suggests that applied research is more "multi-levelled" and "multi-method" compared to basic research. Hedrick *et al*. suggest that it is more varied in purpose and less controllable, while Neuman suggests that it balances scientific rigour with resource limitations. Applied research is therefore likely to be associated with designs that are more flexible and accommodating of mixed-method approaches. Moreover, applied research is also likely to be associated with designs that may incorporate or "layer" other designs to meet varied research purposes – some of which may best be met through designs associated with basic research. Hence, Hakim suggests that applied research designs may incorporate basic research designs such as surveys "that are nationally representative, or else permit extrapolation to the national level".

In fact, Neuman equates applied research with evaluation research, participatory action research, and social impact assessment (2006:26-31), although I would regard social impact assessment as a specialised subtype within evaluation research. Although the

quotes above do not refer to basic research, we may conclude that basic research is likely to be associated with designs that are more structured and oriented around either a quantitative or qualitative approach rather than a mixed-method one. Finally, Hedrick and his co-authors, as well as Neuman, suggest that design is likely to be even more important for applied researchers due to multiple purposes and resource limitations. Thus, "research context" is an important classification criterion for designs.

2.3.2 The teleological dimension

The term "teleology" refers to the study of the cause or purpose behind something. As indicated above, social research is a purposeful activity. Surely, we are trying to achieve something with social research considering the time, money and resources that it consumes. Yet, what exactly are we trying to achieve with it, and are different intentions associated with different designs?

Within the teleological dimension, terms such as "research aims", "research purposes", "research goals", and "research objectives" come to the fore as methodological considerations. However, researchers often use these terms interchangeably, thus a proper distinction between them is necessary at this point. As Fouché and De Vos explain:

> The terms "goal", "purpose", and "aim" are thus often used interchangeably, i.e., as synonyms for one another. Their meaning implies the broader, more abstract conception of "the end toward which effort or ambition is directed", while "objective" denotes the more concrete, measurable and more speedily attainable conception of such an "end toward which effort or ambition is directed". The one (goal, purpose or aim) is the "dream"; the other (objective) is the steps one has to take, one by one, realistically at grass-roots level, within a certain time span, in order to attain the dream.
>
> (2005a:104)

Here, we see a distinction between "aims", "purposes" and "goals" on a more abstract level, and "objectives" on a more concrete level. However, a further distinction is necessary if we consider levels such as (1) the research context, (2) the research project, and (3) the research problem. In the previous section, different contexts, i.e., basic vs. applied, were shown to involve different aims, i.e., creating new knowledge vs. problem solving. It is therefore appropriate to reserve the term "research aims" to refer to intentions on a higher level or in terms of the broader context in which we conduct research.

At the level of the research project, it is useful to refer to projects as having an overall "research purpose" or "research goal" to ensure that a study by itself has a definitive focus in terms of what it is meant to achieve. Methodologists therefore normally refer to three types of studies in the social sciences, namely "explanatory", "exploratory" or "descriptive" studies. However, methodologists tend to use the terms "purposes" and "goals" interchangeably. Since most of them use the term "purposes" (e.g., see Babbie & Mouton, 2001; De Vaus, 2001; Robson, 2002; Neuman, 2006; Babbie, 2007), it is also used in this dissertation, while researchers should ideally use the term in social research in the built environment.

At the level of the research problem, it is useful to refer to "research objectives", since the research problem and sub-problems (or questions and sub-questions) are often turned into or substituted for objectives to denote the more measurable and tangible research tasks at "grass-roots level". Research objectives typically appear as verb statements, such as "to analyse…", "to review…", "to classify…" etc. However, it is possible for the research purpose and problem to be similar so that the distinction between "purposes" and "objectives" is not always clear. Yet, as I will show below, there are more-or-less distinct sets of purposes and objectives for social research. The more important methodological considerations for research design in the teleological dimension therefore include (1) research aims, (2) research purposes, and (3) research objectives.

2.3.2.1 Research aims

As indicated above, different contexts, i.e., basic vs. applied, involve different aims, i.e., creating new knowledge vs. problem solving. It is therefore possible to distinguish between two broad aims for social research, namely theoretical vs. practical aims. According to Mouton and Marais, theoretical aims typically involve predicting and understanding social reality, etc., while practical aims involve improving quality of life, emancipating certain groups, etc (1996:19). Given the applied nature of built environment disciplines, it follows that the dichotomy of theoretical vs. practical aims is particularly useful to classify designs for social research in the built environment. However, like the basic vs. applied dichotomy, the theoretical vs. practical dichotomy should also be seen as a continuum along which the aim of a study may vary from predominantly theoretical to predominantly practical.

"Research aims", i.e., the higher-level intention of studies, is no doubt an important consideration when designing studies. Like "research contexts", "research aims" is likely

to yield a similar classification of designs. Theoretical aims are likely to be associated with designs preferred by academics and that allow greater control over the research process, while practical aims are likely to be associated with designs preferred by practitioners and that allow greater flexibility in the research process. Theoretical and practical aims are in turn associated with different research purposes.

2.3.2.2 Research purposes

Theoretical aims are of course associated with theoretical purposes and practical aims with practical purposes. "Theoretical" purposes, as indicated earlier, include exploratory, descriptive, and explanatory purposes. Most textbooks mention these three purposes to the extent that they are perhaps seen as *the* purposes of social research (e.g., see Neuman, 2006: 33-36; Babbie, 2005:88-91; 2007:87-90). Exploratory research focuses on unexplored or little understood phenomena with the purpose of laying the ground for further descriptive or explanatory research. Descriptive research focuses on the inherent characteristics of phenomena with the purpose of providing an accurate picture of them. Explanatory research focuses on the causal relationships between phenomena with the purpose of testing hypotheses about the nature, extent, or occurrence of the phenomena.

However, these three purposes do not necessarily cover all types of theoretical research. To these we can add an interpretative purpose, which is typical of studies trying to make sense of texts, conversations, events, and peoples' lives. Textbooks probably omit "interpretation" as one of the main purposes since any study necessarily involves interpretation, albeit interpretation of *data*. Nevertheless, I identify "interpretation" as one of the main theoretical purposes of social research due to its association with various types of studies.

Textbooks seldom identify practical purposes. Yet, practical purposes may include anything that improves quality of life. Neuman, for example, equates applied research, i.e., research with practical purposes, with evaluation and action research (2006:26-31). "Practical" purposes may therefore include evaluative and emancipatory purposes. Considering that architects, urban designers and planners also do a lot of research to enable them to intervene in the built environment, it follows that "practical" purposes may also include formative purposes, such as analysing a site for planning or design purposes, formulating policy guidelines, etc.

"Research purposes" therefore includes theoretical purposes (i.e., explanatory, interpretative, exploratory and descriptive purposes), and practical purposes (i.e., formative, evaluative and emancipatory purposes). Because "research purposes" is found at the project level, i.e., it relates to the intention of a study itself, it follows that it certainly contributes toward a classification of designs for different types of studies.

Yet, how are different purposes associated with different designs? As with theoretical *aims*, theoretical *purposes* are likely to be associated with designs preferred by academics and that allow greater control over the research process. As with practical *aims*, practical *purposes* are likely to be associated with designs preferred by practitioners and that allow greater flexibility in the research process.

With regard to particular theoretical purposes, explanatory purposes are likely to be associated with designs that have a predominantly quantitative approach to reality and data. Interpretative and exploratory purposes are likely to be associated with designs that have a predominantly qualitative approach, while descriptive purposes are equally associated with quantitative or qualitative approaches. With regard to particular practical purposes, formative, evaluative and emancipatory purposes are all likely to be associated with designs that have less of an orthodox and more of a pragmatic approach to reality and data, combining quantitative and qualitative approaches.

2.3.2.3 Research objectives

At the level of the research problem, "research objectives" includes a wide range of possible research tasks in addition to explanation, interpretation, exploration or any of the other purposes identified above. They may include any task applicable to social research, such as to analyse, argue, assess, classify, compare, construct, correlate, depict, index, map, outline, review, synthesise, test, etc. Neuman lists several objectives typically found in exploratory, descriptive and explanatory studies (2006:34). Although certain objectives are likely to be associated with certain designs (e.g., hypothesis "testing" is likely to be associated with experiments and other structured designs), the wide range of possible tasks in social research renders "research objectives" somewhat ineffective as a classification criterion for designs. Unlike research "aims" and "purposes", I therefore do not attempt to use "objectives" as a possible classification criterion.

2.3.3 The ontological dimension

The term “ontology” refers to the study of being or reality. In the context of social research, “ontology” refers more specifically to “claims or assumptions that a particular approach to social inquiry makes about the nature of social reality – claims about what exists, what it looks like, what makes it up and how these units interact with each other” (Blaikie, 1993:6). Ontology is therefore one of the more philosophical dimensions of social research, involving different or even competing claims or assumptions about the nature of social reality. However, issues of ontology do somehow influence the design of a study, yet, perhaps more so in an indirect way or in a manner of which researchers are not always aware.

However, ontology also involves tangible issues, such as determining what exactly the object of study is – a concept that is to some extent synonymous with the term “unit of analysis”. The more important methodological considerations for research design in the ontological dimension therefore include (1) conceptions of social reality (i.e., claims or assumptions about the nature of social reality), and (2) objects of study.

2.3.3.1 Conceptions of social reality

Methodologists distinguish between two main conceptions of social reality, namely an objectivist vs. a social constructivist conception. Due to the applied nature of built environment disciplines, and due to the normative or sometimes even political nature of social research in the built environment, we may add a third conception, namely a *realist* one.

An objectivist conception holds that social phenomena exist independently and beyond the reach and influence of people. Therefore, we can research social reality *objectively* (Bryman & Teevan, 2005:12). A key implication for research design would be to explain how social reality works. In contrast, a social constructivist conception holds that social phenomena and their meanings are socially constructed and constantly changing. Therefore, we can only research social reality *subjectively* and through the eyes of people (Bryman & Teevan, 2005:3). A key implication for research design would be to make sense of or interpret how reality came about and what it means to different people.

A realist conception holds that social phenomena exist objectively, in the sense that they exist before and after the presence of certain individuals, as well as subjectively, in the sense that they are still socially constructed by people. Social reality more specifically consists of several layers and complicated structures. These layers and structures can

limit the actions of some people while enabling others to act meaningfully and intentionally (Robson, 2002:35). A key implication for research design would be to permeate these layers and structures, perhaps exposing and criticising it, with the purpose of changing social reality for the better and possibly even emancipating certain groups.

Because conceptions of social reality involve philosophical issues that seldom come to the fore in research design, it follows that "conception of social reality" is less likely to serve as a classification criterion for designs. However, if such issues were to surface, then objectivist conceptions are likely to be associated with designs that objectifies social reality and in which researchers are outsiders to the reality being studied. Social constructivist conceptions are likely to be associated with designs that subjectifies social reality and in which researchers are insiders to the reality being researched. Realist conceptions are likely to be associated with designs that engage social reality and in which both researchers and subjects are involved in research processes that are more participatory in nature.

2.3.3.2 Objects of study

Objects of study in social research in the built environment are so many that it is perhaps only possible to refer to them in broad categorical terms. The first distinction that can be made is that social research in the built environment focuses on social and physical objects, as well as the interaction between the two (Næss & Saglie, 2000:729 & 734-735). Social objects include attitudes, perceptions, cognitions or actions of individuals or groups of people, public works of art, historical events, biographies of influential designers or planners, etc. Physical objects include settlements, sites, buildings, etc. Although I use the term "physical", in the context of social research in the built environment, such objects are usually seen as realist or socially constructed in the sense that they imbue ideologies, ideas, values, principles, social relations, etc. For example, certain architectural designs or urban spaces represent certain ideas, facilitate certain social interactions, have different implications for issues of equity, efficiency, sustainability, etc. The "interaction between social and physical objects" refers to environment-behaviour studies that look at the interaction between people and their environments; how both natural and built environments facilitate certain behaviour, how they solicit different attitudes, perceptions or cognitions, how they affect quality of life, etc.

Another way of distinguishing objects of study is to consider different uses of theory. Theory in social research in the built environment tends to be either substantive or

procedural (Næss & Saglie, 2000:732; Groat & Wang, 2002:7-8). Substantive theory is typically *for* planning and design disciplines, and focuses on any object that influences planning and design, such as relationships and conditions that planners and designers need to understand when preparing plans or designs. Procedural theory is typically *on* planning and design professions, and focuses on the functions, tasks, procedures, methods, and results of planning and design (Næss & Saglie, 2000:733).

Yet, we can intersect the dichotomy of substantive vs. procedural theory with another dichotomy, namely positive/descriptive vs. normative/prescriptive theory (Næss & Saglie, 2000:732; Groat & Wang, 2002:78-80; Moudon, 2003:346; Runeson & Skitmore, 2008:77). Positive/descriptive theory is theory about "what is" – what does the reality that planners and designers deal with, as well as the discipline of planning and design itself, look like, and what are its inherent characteristics and relationships? Normative/prescriptive theory is theory about "what should be" – what should built environments look like to improve quality of life and how should they ideally be planned and designed?

On a more concrete level, we can consider what our objects of study are by looking at actual journal articles in the built environment field. Table 3 lists 12 categories of objects of study following a survey of journal articles, which I report in more detail in Chapter 5. The last category was not applicable, and included metaresearch articles about nonempirical or "World 2" objects, such as literature, concepts, typologies, models, theories, arguments, etc.

Table 3: Objects of study in social research in the built environment

Individual categories	Grouped categories
Individuals	Social objects
Groups, networks, communities and partnerships	
Organisations and institutions	
Social artefacts (creative works)	
Built artefacts (settlements, sites, buildings)	Built environment objects
Municipal systems, services, and transportation	
Planning and design philosophies	Planning and design
Planning and design regulations	
Planning and design proposals	
Planning and design interventions	
Planning and design practices	
Planning and design methods	
N/A (Metaresearch)	N/A (Metaresearch)

The individual categories of objects were grouped into three broad categories, namely social objects, built environment objects, and planning and design. Yet, to what extent does "object of study" serve as a classification criterion for designs? Researchers often aim for triangulation, which includes using more than one design to study an object, which makes "object of study" a difficult classification criterion.

2.3.4 The epistemological dimension

The term "epistemology" refers to the study of the grounds of knowledge. In the context of social research, "epistemology" more specifically refers to

> Claims or assumptions made about the ways in which it is possible to gain knowledge . . . whatever it is understood to be; claims about how what exists may be known. An *epistemology* is a theory of knowledge; it presents a view and justification for what can be regarded as knowledge – what can be known, and what criteria such knowledge must satisfy in order to be called knowledge rather than beliefs.
>
> (Blaikie, 1993:6-7)

Like ontology, epistemology is therefore also one of the more philosophical dimensions of social research, involving different or even competing claims or assumptions about the grounds of knowledge. According to Mouton and Marais (1996:19), various epistemological criteria have been put forward in the history and philosophy of science, namely: (1) the search for truth (e.g., Plato and Aristotle), (2) certain and indubitable knowledge (e.g., Descartes), (3) empirical adequacy (e.g., Van Fraassen), (4) problem-solving (e.g., Kuhn), and (5) wisdom/insight (e.g., Maxwell). However, serious claims or assumptions about knowledge, let alone claims about "truth" and "indubitable knowledge", are less of a concern nowadays in social research or in social research in the built environment for that matter. This can partly be ascribed to the advent of pragmatism and increasing pressure on social research to produce socially relevant findings to help understand or solve pressing societal problems within a certain time and space.

A working premise with regard to epistemology is that social research can merely aim to provide knowledge of social reality that is contextually valid, and that no knowledge can be truth *per se*. This premise also underlies this study, which aims to construct a typology of designs exactly to support the production of social knowledge in the built environment field that is at least contextually valid. I therefore concur with Mouton and Marais, who said that:

> Because of the complexity of the research domain of the social sciences, and the inherent inaccuracy and fallibility of research, it is necessary to accept that complete certainty is unattainable. The likelihood that research findings may have limited or contextual validity is accepted, while bearing in mind that subsequent research may reveal that it is invalid. It is, therefore, accepted that the epistemological ideal ought rather to be the generation of research findings which approximate, as closely as possible, the true state of affairs. Bearing in mind that it is impossible to know when the truth has been attained, it necessarily becomes essential to strive constantly for the elimination of falsity, inaccuracy, and error in research.
>
> (1996:15)

Epistemological issues can still influence the design of a study, albeit in very indirect ways. Arguably, most social researchers, especially those in the built environment field, simply do not grapple with epistemological issues in their research. Still, Knight and Turnbull said that "It is important that students undertaking built environment research explore the epistemological assumptions underpinning research without getting completely bogged-down in irresolvable philosophical problems" (2008:64).

"Epistemology" is therefore not likely to be an important classification criterion for designs. However, epistemology has over time contributed to the rise of distinct methodological paradigms that do guide research design in many ways. The following section therefore outlines the methodological dimension of social research.

2.3.5 The methodological dimension

The methodological dimension of course involves the study of *how* to conduct social research. Due to the complexity of social research and due to advances in research methodology over decades, numerous considerations in terms of research design can be included in this dimension. Yet, following the review of prominent methodology texts, the more important considerations for research design in the methodological dimension include (1) methodological paradigms, (2) methodological approaches, and (3) sources of data.

2.3.5.1 Methodological paradigms

As discussed earlier, ontology involves theories about the nature of social reality, while epistemology involves theories about the grounds of knowledge. Different ontologies and epistemologies have over time contributed to the rise of distinct methodological paradigms on how to conduct social research. These paradigms are broad philosophies or coherent systems of thinking on how to conduct research, translating ontological and epistemological concerns into methodological questions. For example, which designs and methods should we used to ensure that knowledge has an epistemic or pragmatic ideal, how should we observe and measure a supposedly objective as opposed to a socially constructed reality, etc? Because it serves as the link between ontological and epistemological considerations on the one hand, and more detailed and tangible methodological considerations on the other (e.g., see Neuman, 2006:80; Feilzer, 2010:8), "methodological paradigms" is the first consideration in the methodological dimension.

The term "methodological paradigms" derives from Thomas Kuhn's theory of "scientific paradigms" (e.g., see Kuhn, 1962:23). Methodologists sometimes substitute the term "paradigm" with terms such as "approach" (e.g., see Neuman, 2006:79) or "worldview" (e.g., see Creswell, 2009:5-6). However, most methodologists seem to use the term "paradigm" (e.g., see Mouton, 1996:203-208; Mertens, 1998 and Guba & Lincoln, 2000 as cited by Creswell, 2009:5-6; Feilzer, 2010:7). Also, the term "approach" is associated more with the notion of quantitative vs. qualitative research (as I will show later), while the term "worldview" is rather unusual in the methodological literature. I therefore also use

the term “methodological paradigms” in this dissertation, while researchers should ideally use the term in social research in the built environment.

Although paradigms have a closer link with methodological issues compared to ontologies and epistemologies, most social researchers, especially those in the built environment field, do not grapple with paradigmatic issues in their research either. Neuman for example said that:

> The approaches [paradigms] are rarely declared explicitly in research reports, and many researchers have only a vague awareness of them. Yet, the approaches play an important role and are found across the social sciences and their related applied fields.
>
> (2006:79)

Whether researchers declare the paradigms in which they work or not, or whether they are even aware of them, paradigms do somehow influence research design. Even if researchers are simply taking a pragmatic stance, or are completely unaware of the fact that there are distinct paradigms, the mere choice of a particular design or method may invariably lend a study a particular paradigmatic stance towards reality, knowledge, theory, values, etc. It is therefore important for researchers to be more aware of different paradigms and how such paradigms are associated with different methodological considerations, so that they can at least be clearer about their more obvious paradigmatic stances. As Creswell explains:

> Although philosophical ideas remain largely hidden in research (Slife & Williams, 1995), they still influence the practice of research and need to be identified. I suggest that individuals preparing a research proposal or plan make explicit the larger philosophical ideas they espouse. This information will help explain why they chose qualitative, quantitative, or mixed methods approaches for their research.
>
> (2009:5-6)

Yet, what are the main paradigms in social research, in particular social research in the built environment, and how are they associated with different methodological considerations? Most methodology textbooks discuss three main paradigms, namely positivism, interpretative social science, and critical social science. Feminism and postmodernism are “nuanced positions” rather than distinct paradigms, and are associated more with critical and interpretative social science (Feilzer, 2010:6). Pragmatism is a possible fourth paradigm in addition to the three main ones. Pragmatism is particularly applicable to social research in the built environment because of the

interdisciplinary character of built environment disciplines, while it has also received recent attention as a paradigm for planning theory (e.g., see Verma, 1996; Harrison, 1998; Healy, 2009). Moreover, social research in the built environment has arguably never really taken sides in the so-called "paradigm wars" between positivist and interpretative social science. As Næss and Saglie explain:

> The interdisciplinary character of the subject . . . implies that planners – and planning researchers – bring along different methodological traditions, theoretical frameworks of comprehension and epistemological positions. . . . Therefore, it is hardly possible to identify any common, generally supported epistemology within planning research. Different epistemological positions are represented, and disagreement and discussion of what are appropriate research strategies will therefore often occur, for example regarding the use of quantitative versus qualitative research designs. Today, there still seems to be increasing support for the view that the research strategy should be chosen conditionally (depending on the research problem addressed), and that different research strategies could preferentially be combined in order to make the strengths of one approach compensate for the weaknesses of another, and vice versa. If we are at all getting closer to any 'paradigmatic' epistemological position among planning researchers, it might be just this emphasis on contingency and combination of methods.
>
> (2000:735)

A detailed discussion of each paradigm would have been beyond the scope of this chapter. Instead, Table 4 provides a succinct comparison between the paradigms, including feminism and postmodernism, in terms of a number of criteria or methodological considerations. I borrowed Table 4 as it is from Neuman (2006:105), but added the last column to include pragmatism. My interpretations of pragmatism in terms of the criteria listed in the table are based on the views of Robson (2002:42-44), Creswell (2009:10-11) and Feilzer (2010:6-9).

Table 4: Comparison between methodological paradigms (Continued on next page)

Criteria	Methodological paradigms					
	Positivist	**Interpretative social science**	**Critical social science**	**Feminist**	**Post-modern**	**Pragmatic**
Reason for research	To discover natural laws so people can predict and control events	To understand and describe meaningful social action	To debunk myths and empower people to change society	To empower people to advance values of nurturing others and equality	To express the subjective self, to be playful, and entertain and stimulate	To solve problems in the real world and improve the human condition
Nature of social reality	Stable pre-existing patterns or order that can be discovered	Fluid definitions of a situation created by human interaction	Multiple layers and governed by hidden, underlying structures	Gender-structured power relations that keep people oppressed	Chaotic and fluid without real pattern or master plan	Accepts multiple social realities
Human nature	Self-interested and rational individuals who are shaped by external forces	Social beings who create meaning and who constantly make sense of their worlds	Creative, adaptive people with unrealised potential, trapped by illusion	Gendered beings with unrealised potential often trapped by unseen forces	Creative, dynamic beings with unrealised potential	Accepts multiple views of human nature
Human agency	Powerful external social pressures shape people's actions; free will is largely illusion	People have significant volition; they develop meanings and have freedom to make choices	Bounded autonomy and free choice structurally limited, but the limits can be moved	Structural limits based on gender confined choices; but new thinking and action can breach the limits	People have great volition, and all structures are illusionary	Accepts multiple views of human agency; research occurs in social, historical and political contexts
Role of common sense	Clearly distinct from and less valid than science	Powerful everyday theories used by ordinary people	False consciousness that hide power and objective conditions	False consciousness that hide power and objective conditions	The essence of social reality that is superior to scientific or bureaucratic forms of reasoning	Arises out of actions, situations and consequences rather than antecedent conditions

Table 4: Comparison between methodological paradigms (Continued from previous page)

Criteria	Methodological paradigms					
	Positivist	**Interpretative social science**	**Critical social science**	**Feminist**	**Post-modern**	**Pragmatic**
Theory looks like	A logical, deductive system of interconnected definitions, axioms, and laws	A description of how a group's meaning system is generated and sustained	A critique that reveals true conditions and helps people take action	A critique that reveals true conditions and helps people see a way to a better world	A performance or work of artistic expression that can amuse, shock, or stimulate others	A normative argument for "what should be"; an explanation for "what works"
An explanation that is true	Is logically connected to laws and based on facts	Resonates or feels right to those who are being studied	Supplies people with tools needed to change the world	Supplies tools/ideas to help liberate people from oppressive relations	No one explanation is more true; all are true for those who accept them	Works at the time; can be applied; solves a problem in the real world
Good evidence	Is based on precise observations that others can repeat	Is embedded in the context of fluid social interactions	Is informed by a critical theory that penetrates the surface level	Is informed by theory that reveals gender structures	Has aesthetic properties and resonates with people's inner feelings	Is usually a combination of quantitative and qualitative data; clarifies the problem
Relevance of knowledge	An instrumental orientation is used; knowledge enables people to master and control events	A practical orientation is used; knowledge helps us embrace / share empathetically others' life worlds and experiences	A dialectical orientation is used; knowledge lets people see and alter deeper structures	Knowledge raises awareness and empowers people to make change	Former knowledge has no special value; it can amuse or bring personal enjoyment	Anti-representational; knowledge has to be socially useful and help us understand and solve real world problems
Place for values	Science is value free, and values have no place except when choosing a topic	Values are an integral part of social life: no group's values are wrong, only different	All science must begin with a value position; some positions are right, some are wrong	Values are essential to research, and feminist ones are clearly preferred	Values are integral to research, but all value positions are equal	Reflexive research practice; values should reflect social justice and political aims

Table 4 shows that the paradigms indeed hold many different claims and assumptions about how we should conduct research. Moreover, it should be clear from Table 4 that the paradigms represent coherent systems of thinking about various methodological considerations across the dimensions of social research. Feminism clearly resonates with critical social science, while postmodernism stands in radical opposition to positivism. However, it should be noted that little, if any, social research in the built environment is "positivist" in the strict sense of the word. Later in this dissertation, I refer to "post-positivism" rather to denote a form of positivism that is more a critique and amendment of logical positivism.

Nevertheless, Table 4 suggests that the paradigms steer towards the next important consideration in the methodological dimension, namely different *approaches* to conduct research. These approaches involve different strategies for researching social reality, particularly with regard to using different types of data that resonate with different ontologies and epistemologies. Positivism is strongly associated with a quantitative approach, i.e., research in which data take the form of numbers, statistics, scores, measurements etc., while interpretative social science is strongly associated with a qualitative approach, i.e., research in which data take the form of words, texts, images etc. Critical social science and pragmatism are less associated with quantitative or qualitative approaches and more with participatory and mixed-method approaches respectively. Researchers, especially those in built environment disciplines, arguably know and use the language associated with these approaches more so than that of the paradigms. Hence, we read more about "quantitative" or "qualitative" rather than "positivist" or "interpretative" research for example. The main differences between these approaches are discussed in the next section.

Because methodological paradigms translate ontological and epistemological concerns into methodological questions, and because they are associated with different approaches to conduct research, it follows, that "methodological paradigm" is an important classification criterion for research designs. Suffice to conclude that positivism, or post-positivism, is associated with designs that are evidently structured and quantitative in their orientation towards data, since structured designs and quantitative data are better suited for measuring phenomena and making predictions and explanations. Interpretative social science is associated with designs that are less structured and qualitative, since qualitative data are better suited for "getting closer" to phenomena and making explorations, interpretations, and descriptions. All things being equal, critical social science is associated more with participatory designs, since the ideal

is to involve and empower people rather than subjectify them, while pragmatism is associated more with mixed-method designs in which methods are combined in a more creative manner, provided they work (e.g., see Creswell, 2009:10-11).

2.3.5.2 Methodological approaches

The previous section suggested that "methodological approaches" involve strategies that revolve around the use of different types of data. Methodologists often use the term "approaches" interchangeably with "strategies" (e.g., see Bryman & Teevan, 2005:14-16; Creswell, 2009:11-15). However, most methodologists use the term "approaches" (e.g., see Mouton & Marais, 1996:20; De Vos *et al*., 2005; Neuman, 2006). Moreover, Blaikie uses the term "strategies" to denote different modes of reasoning, i.e., deductive, inductive, etc (1993:131-200), while in built environment disciplines the term "strategies" is associated more with planning and design interventions rather than research. I therefore use the term "methodological approaches" in this dissertation, while researchers should ideally use the term in social research in the built environment.

The previous section also identified the main approaches in social research, namely quantitative, qualitative, mixed-method and participatory. It is important to note at the outset that quantitative and qualitative approaches, although often seen as competing, are not necessarily exclusive of each other, and that studies are usually either quantitative or qualitative only by virtue of the fact that one of the two approaches predominates.

> Qualitative and quantitative approaches should not be viewed as polar opposites or dichotomies; instead, they represent different ends of a continuum (Newman & Benz, 1998). A study *tends* to be more qualitative than quantitative and vice versa. Mixed methods research resides in the middle of this continuum because it incorporates elements of both qualitative and quantitative approaches.
>
> (Creswell, 2009:3)

Creswell sees the mixed-method approach as residing in the middle of the continuum. However, this does not mean that mixed-method research simply uses both quantitative and qualitative methods. A mixed-method study is one in which "a researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts, or language into a single study" (Johnson & Onwuegbuzie, 2004:17 as cited by Yin, 2006:41). More specifically, this "mixing" and "combining" takes place through either "within-method triangulation" or "between-method triangulation" (Gaber & Gaber,

2004:228). A study is therefore not necessarily a mixed-method study if it simply contains both quantitative and qualitative data. In fact, many studies contain both, but tend to emphasise one of the two, while using one to corroborate or triangulate findings from the other. Creswell explains further:

> Mixed methods research is an approach to inquiry that combines or associates both qualitative and quantitative forms. It involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both types of study. Thus, it is more than simply collecting and analyzing both kinds of data; it also involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research . . .
>
> (2009:4)

In a participatory approach, the focus shifts from having a particular orientation towards data and reality to actively involving people who would otherwise be passive subjects in the research process. This approach is thus more about participation and taking action for purposes of bringing about positive change or even emancipation. Researchers use their skills to generate data and information that other stakeholders may use for decision-making and action, while such data and information could be either quantitative, qualitative, or mixed – whichever serves the purpose.

The Danish academic and urban planner, Bent Flyvbjerg, has given the participatory approach some prominence in social research in the built environment through his notion of "phronetic planning research" (2002). In his book, *Making social science matter: Why social inquiry fails and how it can succeed again*, Flyvbjerg is less concerned with adopting either a quantitative or qualitative approach, and instead proposes methodological "guidelines" that are fairly qualitative and/or participatory in nature. These include: "focusing on values and power, getting close to reality, emphasizing little things, looking at practice before discourse, studying cases and contexts, conducting narratives, joining agency and structure, and dialoguing with a polyphony of voices" (2001:130-140).

Although I identify four distinct approaches, the quantitative vs. qualitative continuum remains an important heuristic device for considering and reflecting on different approaches. Even though some methodologists are beginning to disregard the continuum, the language associated with it remains very much part of the vocabulary and understanding of many researchers in the built environment field. Moreover, it should also be kept in mind that the continuum still helps to elucidate aspects of mixed-method and

participatory approaches. It is therefore appropriate to conclude the discussion on methodological approaches by comparing quantitative and qualitative ones. Most methodology textbooks make such a comparison anyhow. Table 5 shows Leedy and Ormrod's comparison in terms of five criteria, namely (1) purpose, (2) process, (3) data collection, (4) data analysis, and (5) reporting of findings (2010:96).

Table 5: Comparison between methodological approaches

Criteria	Methodological approaches	
	Quantitative	**Qualitative**
What is the purpose of the research?	• To explain and predict • To confirm and validate • To test theory	• To describe and explain • To explore and interpret • To build theory
What is the nature of the research process?	• Focused • Known variables • Established guidelines • Predetermined methods • Somewhat context-free • Detached view	• Holistic • Unknown variables • Flexible guidelines • Emergent methods • Context-bound • Personal view
What are the data like, and how are they collected?	• Numeric data • Representative, large sample • Standardised instruments	• Textual and/or image-based data • Informative, small sample • Loosely structured or nonstandardised observations and interviews
How are data analysed to determine their meaning?	• Statistical analysis • Stress on objectivity • Deductive reasoning (Statistical inference)	• Search for themes and categories • Acknowledgement that analysis is subjective and potentially biased • Inductive reasoning
How are the findings communicated?	• Numbers • Statistics, aggregate data • Formal voice, scientific style	• Words • Narratives, individual quotes • Personal voice, literary style

Source: Leedy & Ormrod (2010:96)

Table 5 provides an indication of how "methodological approach" may serve as a classification criterion for research designs. A quantitative approach is likely to be associated with designs that are more structured, use numerical data, objectify reality, and have mainly explanatory and descriptive research purposes. A qualitative approach is likely to be associated with designs that are less structured, use textual data, subjectify reality, and have mainly interpretative, exploratory and descriptive research purposes.

Notwithstanding Table 5, a mixed-method approach is likely to be associated with designs that are flexible, use both numeric and textual data, engage reality and have practical research purposes. A participatory approach will simply be associated with designs that are participatory in structure. Due to the various considerations associated with different approaches, "methodological approach" appears to be an important classification criterion for designs. Moreover, many researchers arguably first consider an approach before considering a particular design.

2.3.5.3 Sources of data

Another consideration in the methodological dimension is "sources of data". Sources of data for social research, including social research in the built environment, are either primary or secondary. Primary data are new data collected directly from subjects or from a researcher's own measurements or observations. Primary data are either numeric (e.g., questionnaire scales) or textual (e.g., interviews). Both numeric and textual primary data are either in a raw or processed (coded) format. Secondary data are existing data previously collected, e.g., existing databases, reports, letters, media contents, archives, etc. Secondary data are also either numeric (e.g., census data and other datasets) or textual (e.g., official records, media contents, letters, archives, etc). Secondary data usually have much less time and cost implications.

Because a particular source holds implications for how data are collected, analysed and interpreted, it follows that "source of data" may serve as a possible classification criterion for research designs. Most designs, however, are likely to use primary sources of data. Only designs associated with research on realities not easily represented through primary data, such as past or future objects, are likely to use secondary sources of data. These may include designs for researching past objects, such as content analysis, historiography, biography, etc., or designs for researching future objects, such as modelling, simulation, scenario research, etc.

2.4 SUMMARY AND CONCLUSION

The objective of this chapter was to outline the dimensions of social research, i.e., the sociological, teleological, ontological, epistemological, and methodological dimensions. In each of these dimensions, methodological considerations that influence research design were identified, discussed and clarified how they may contribute towards a classification of designs. These considerations included: (1) research contexts, (2) research aims, (3) research purposes, (4) research objectives, (5) conceptions of social reality, (6) objects of

study, (7) methodological paradigms, (8) methodological approaches and (9) sources of data. Those identified as possible classification criteria for a typology of designs included: (1) research contexts, (2) research aims, (3) research purposes, (4) methodological paradigms, (5) methodological approaches and (6) sources of data. In addition, the chapter clarified and standardised methodological concepts and terms used in this dissertation.

The contribution of this chapter therefore consisted in providing (1) a better understanding of the dimensions of social research and how they relate to social research in the built environment, (2) a theoretical lens, i.e., a five-dimensional framework through which to conduct methodological analyses, and (3) a more coherent methodological language for the built environment field. The subsequent chapter explores methodological issues in social research in the built environment in order to provide a better understanding of the difficulties faced by researchers and how a typology of designs may address some of these difficulties.

Chapter 3 Methodological issues in social research in the built environment

3.1 INTRODUCTION

The objective of this chapter is to explore methodological issues in social research in the built environment. Initially, this part of the study aimed to explore methodological issues in a broad sense. The question of course was which locations of built environment research to explore. During the first year of the study, exploratory interviews, or fact-finding discussions, were held with a number of stakeholders across two locations of built environment research in South Africa, namely universities and science councils, as well as with an independent consultant and two visiting international scholars (see Appendix 1).

However, the issues that were raised across these two locations were not really methodological in nature, but rather institutional, disciplinary, strategic and financial. At universities, issues revolved around low levels of research output in built environment departments.[9] Low levels of output are in turn associated with a range of other institutional and disciplinary issues. Some of these include weak research cultures, lack of research skills, and the applied nature of built environment disciplines steering efforts away from publishing to teaching and consulting, etc (Manie Geyer, personal discussion, 29 March 2007; Carel Schoeman, personal discussion, 29 March 2007; Johan Jacobs, personal discussion, 18 July 2007; Peter Robinson, personal discussion, 18 July 2007).

At the science councils, including the HSRC and CSIR, issues revolved around how to respond to or solicit government and market demand for research, how to structure and strategically position research entities, how to secure contract funded research, and how to meet income targets, etc. At the HSRC's former Cities Research Unit, there was a perception that these issues actually interfered with the methodological integrity of projects. For example, project managers would deliberately choose designs with higher direct costs, such as large-scale quantitative surveys and evaluations, to increase budgets on contract-funded projects, regardless of the nature of the research question (Clair Benit, personal discussion, 30 May 2007).

9 The issue of low levels of output in built environment departments is not unique to South Africa, and has been discussed in an international context (e.g., see Stevens,1998:153-155).

At the CSIR's Built Environment research programme, methodological issues, unlike at the HSRC, tended not to feature at a strategic level, but were dealt with by research teams on a project level (Chris Rust, personal discussion, 25 April 2007). Consequently, researchers in the Built Environment programme had a very pragmatic view of methodological issues. Having referred to newly coined worldviews in built environment research – such as "sustainability science" and "open world science", in which they see reality as nonlinear, nondeterministic, complex and systemic – their view of methodological issues was simply that:

> Research methods should not steer towards a specific correct or deductively derived answer, but rather towards a clarification of the problem, in which various possible alternative courses of action would become evident. Thus, any method that would clarify reality would be important, as long as one *documents the process very clearly*. Research procedures should be rigorous and robust. Use whatever methods, but use them *correctly*. Thus, it is important that researchers have a good knowledge of the workings of different research designs and methods.
>
> (Dirk Conradie, Louisa Duncker, Chrisna du Plessis, Karina Landman, focus group discussion, 25 May 2007)

Following these interviews and discussions, it became apparent that the more intricate issues were not coming to the fore in the context of research conducted at universities and science councils. Given my own experience of the challenges of coordinating postgraduate research in the planning programme at the University of Pretoria, I subsequently decided to survey and analyse the methodologies of built environment theses at South African universities.

Surveying theses and identifying methodological issues therein made sense given that one of the potential benefits of the typology is that lecturers can use it as a pedagogical tool to teach postgraduate students. Moreover, I realised that a survey of theses could also serve as a pilot for the subsequent survey of journal articles. The more specific objectives of this chapter are therefore to examine (1) thesis curricula for built environment programmes, (2) the profile of theses, and (3) the methodological characteristics of theses. The contribution of this chapter consists in providing a better understanding of the difficulties faced by researchers and how a typology of designs may address some of these difficulties. In addition, the chapter provides a methodology for similar metamethodological studies of theses.

3.2 RESEARCH DESIGN AND METHODS USED IN THIS CHAPTER

The research design constituted a survey of theses and quantitative content analysis of their stated methodologies. The following sections discuss the methods used for data collection, analysis and interpretation.

3.2.1 Data collection

Data collection involved sampling of theses, followed by a process of capturing data from theses.

3.2.1.1 Sampling of theses

The range of theses included all masters and doctoral social research theses in architectural and planning programmes in South Africa since the inception of programmes up to 2007, the year in which I conducted the survey. Only masters and doctoral programmes based on full theses were included, unless programmes were based on taught masters with partial theses, in which case those theses were included. At the time of the survey, there was no postgraduate programme in urban design that included a research thesis, only a design thesis,[10] hence the chapter focuses on architectural and planning theses only. The reason for surveying a wide range of theses was because of the assumption that methodological issues varied over time and across different universities and programmes.

A detailed sample frame was compiled to allow the drawing of a sample of theses from which findings could be generalised to the range of theses as outlined above. Thus, the sample frame was outlined with total numbers of completed theses from each of the seven universities in South Africa that offered architectural and/or planning programmes,[11] as well as by programme (architecture vs. planning) and by level (masters vs. doctoral). Numbers of completed theses were obtained from university administrations and the South African National Research Foundation's *Nexus* database. Some university administrations were either slow or unable to provide numbers, resulting in the use of the *Nexus* database to compile the sample frame while data that were available from university administrations served as crosschecks.

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10 A "design thesis" is a thesis in which a student conducts applied research to inform or evaluate a particular design. The research component is usually secondary to the design component.

11 The University of Limpopo, an eighth university that offers an planning programme, was excluded as it had yet to complete a masters or doctoral thesis at the time of the survey. The University of Stellenbosch, although included in the survey, closed its planning programme a year or so before the survey.

I visited North West University as a pilot to establish a protocol for surveying theses at the various universities whilst doing the first sampling and surveying of masters and doctoral planning theses completed at that institution. Upon my return to the University of Pretoria, and following a workshop with six undergraduate final-year planning students, each student visited one of the remaining six universities as a fieldworker with the directive to sample at least 30 masters and doctoral theses randomly. However, in most cases, the students had to sample all available theses, as there were fewer than 30 theses in university and departmental libraries. Since the Universities of North West and Stellenbosch did not offer a programme in architecture, no architectural theses were sampled from these two universities.

Table 6 lists the numbers of completed and sampled theses, as well as sample sizes expressed as percentages, by university, level, and programme. According to Table 6, the number of theses in question totalled 629 (N = 629). Of these, 210 (n = 210) were to some extent randomly sampled, stratified by university, programme, and level. This total number of sampled theses yielded a sample size of just over 33%, or a third of the "universe" of theses in the country. The earliest thesis in architecture dated back to 1958, while the earliest thesis in planning dated back to 1962.

Students were able to sample all doctoral theses in planning at the Universities of KwaZulu Natal, North West, Pretoria, and Stellenbosch. Numbers of doctoral theses are generally much lower than masters theses. The University of Cape Town, for example, had produced only one doctoral thesis in planning at the time of the survey. This is perhaps indicative of the weak research culture at built environment departments. The architecture programme at the University of Pretoria had produced the highest number of doctoral theses (17 in total) compared to any other doctoral programme. If the data from the *Nexus* database and university administrations are correct, then the University of Cape Town had yet to produce a research masters or doctoral thesis in architecture at the time of the survey, while the University of the Free State had yet to produce a doctoral thesis in architecture.

Table 6: Outline of the sample frame and sample of theses

University	Level	Programme								
		Architecture			Planning			Total		
		N	n	Sample size (%)	N	n	Sample size (%)	N	n	Sample size (%)
Cape Town	Masters	0	0	0.0	68	8	11.8	68	8	11.8
	Doctoral	0	0	0.0	1	0	0.0	1	0	0.0
Free State	Masters	14	11	78.6	56	30	53.5	70	41	58.5
	Doctoral	0	0	0.0	5	3	60.0	5	3	60.0
KwaZulu Natal	Masters	23	6	26.1	4	2	50.0	27	8	29.7
	Doctoral	6	1	16.7	5	5	100.0	11	6	54.5
North West	Masters				12	9	75.2	12	9	75.2
	Doctoral				7	7	100.0	7	7	100.0
Pretoria	Masters	35	16	45.7	52	29	55.9	87	45	51.8
	Doctoral	17	11	64.5	7	7	100.0	24	18	74.8
Stellenbosch	Masters				195	27	13.9	195	27	13.9
	Doctoral				5	5	100.0	5	5	100.0
Witwatersrand	Masters	62	19	30.7	38	9	23.7	100	28	28.0
	Doctoral	11	3	27.2	6	2	33.3	17	5	29.4
Total		**168**	**67**	**39.9**	**461**	**143**	**31.1**	**629**	**210**	**33.4**

3.2.1.2 Data capturing

The student fieldworkers returned to the University of Pretoria with photocopies of the title page, abstract, table of contents, and the introductory and method sections of each sampled thesis. Data were collected through a meticulous reading of each of these sets of copies, after which the profile and methodological characteristics of theses were coded as numerical data and captured in an MS Excel spreadsheet. A small number of theses that did not constitute social research were excluded. Examples included theses about construction methods and materials or the use of software applications in architectural design. Table 7 outlines the data-capturing instrument, or database structure, including the different variables, i.e., data fields, that captured the profile and methodological characteristics of theses, and, where applicable, the categories for each variable. The first part of the instrument pertained to the profile of theses, while the second part pertained to their methodological characteristics.

Table 7: Data-capturing instrument for the thesis survey (Continued on next page)

Variables	Variable categories
Profile of theses	
Institution	(Not applicable)
Programme	Architecture
	Planning
Level	Taught masters
	Research masters
	Doctoral
Year of completion	(Not applicable)
Language	Afrikaans
	English
Title of thesis	(Not applicable)
Clearly phrased research problem/question	Yes
	No
Clearly phrased sub-problems/questions	Yes
	No
Discussion of research designs and methods	In a standalone chapter
	In a standalone section / Limited within the text
	None

Table 7: Data-capturing instrument for the thesis survey (Continued from previous page)

Variables	Variable categories
Methodological characteristics of theses	
Research aims	Theoretical
	Practical
	Multiple
Research purposes (theoretical) ("Interpretation" was not included at the time of the survey)	Explanatory
	Exploratory
	Descriptive
	Multiple
Research purposes (practical) ("Emancipation" was not included at the time of the survey)	Formative
	Evaluative
	Multiple
Objects of study	Social objects
	Built environment objects
	Planning and design
Methodological paradigms	Post-positivist
	Interpretative social science
	Critical social science (Incl. feminist and post-modern)
	Pragmatic
Methodological approaches	Quantitative
	Qualitative
	Mixed-method
Sources of data	Primary
	Secondary
	Hybrid
Research designs	(Not applicable)

Following the capturing of data from all 210 theses, each field in the database was systematically checked and cleaned to eliminate possible data-capturing errors or inconsistencies. The data-capturing instrument as it appears in Table 7 had to undergo several refinements as data coding and capturing proceeded. Nevertheless, the instrument now serves as a useful contribution to the built environment field for similar metamethodological studies of theses, not only in architecture and planning, but also in associated fields such as landscape architecture, interior architecture, urban design, construction management, etc.

3.2.2 Data analysis

The cleaned MS Excel dataset was exported for data analysis to the Statistical Package for the Social Sciences (SPSS). SPSS is a well-known and powerful programme for the analysis of social data. In addition to analysis, SPSS also provides useful data management and formatting tools for the recoding of variables, computation of new variables, filtering of cases, data weighting, etc. – all of which proved critical during the analysis of data.

Contingency tables and descriptive statistics were used for the bulk of the analysis. A contingency table, also known as a "cross-tabulation", summarises data for one variable in relation to another so that the relationship between the two is elucidated. Since all of the data pertaining to this chapter were nominal, Chi-squares were used to test whether relationships in contingency tables were statistically significant or not. Statistical significance was calculated at the 95% confidence level.

Since different sample sizes were obtained per university and programme, data for each thesis had to be weighed to reflect the actual proportion of theses in the "universe" for that particular university and programme, otherwise universities and programmes with larger samples would have skewed the findings. Statistical weights were calculated for all theses sampled within a particular university and programme by dividing the total number of theses completed in that university and programme with the number of theses sampled from that university and programme. These factors then served as statistical weights during data analysis. In other words, data of theses from proportionally smaller samples were assigned larger weights to make them count more while theses from proportionally larger samples were assigned smaller weights.

In addition to the calculation of actual weights, "scaled weights" were also calculated for each thesis using the following formula:

$$Weight_{Scaled} = \frac{Weight_{Actual} \times n}{\sum Weight_{Actual}}$$

The purpose of scaled weights was to counter the effect of large counts whilst still accounting for variation in sample sizes. All of the data reported in this chapter are weighed by means of scaled weights so that the proportions in contingency tables at least provide a reasonably valid reflection of actual proportions in the "universe" of theses. Scaled weights were also used during the calculation of Chi-squares, since Chi-squares

would otherwise have been particularly sensitive to inflated counts resulting in an easy yield of statistical significance.

3.2.3 Data interpretation

Data are interpreted by generalising about masters and doctoral social research theses in architectural and planning programmes across South Africa through observing patterns and relationships in contingency tables. Data are interpreted with regard to (1) the profile of theses, and (2) their methodological characteristics. Data for each item are presented across (1) programme (i.e., architectural vs. planning theses), and (2) period (i.e., theses before 1994 vs. theses during and after 1994). The reason for choosing "1994" as the cut-off year between the two periods is that 1994 constituted the median year in the dataset, while 1994 also marked the symbolic transition to a full democracy in South Africa. This transition may have had some impact on social research in the built environment since a stronger emphasis might have been placed on critical social science and approaches associated therewith, including qualitative and participatory approaches.

3.3 FINDINGS

Findings are presented by examining (1) thesis curricula, (2) the profile of theses, and (3) the methodological characteristics of theses.

3.3.1 Thesis curricula

Architecture and planning programmes in South Africa typically focus on the training of undergraduate students for professional careers in local authorities and construction industries. These programmes in turn allow graduates to register as architects or urban planners with their respective professional councils. Bachelor and taught masters courses therefore tend to be practically intensive, absorbing most of the human resources in built environment departments. Consequently, most built environment departments do not have well-established or well-resourced research centres or programmes within which postgraduate students could do their theses under experienced research teams. Instead, built environment departments tend to have loosely defined research areas structured around the idiosyncratic research interests of individual staff members. Prospective masters and doctoral candidates liaise with a potential supervisor and then submit a proposal if there is agreement on the topic. Yet, do these programmes at least adhere to the basic requirements for masters and doctoral theses?

Before looking at the content of theses, it was necessary to get a better idea of what supervisors expected from students when they did their theses. Table 8 lists examples of thesis curricula in a number of architectural and planning programmes at South African universities. The selection of programmes and curricula was not random or systematic, but simply came down to whichever yearbooks, syllabi, study guides, etc., were readily available at the time of this study.

Table 8 shows three different sets of thesis curricula. The first set was deemed appropriate for postgraduate theses considering (1) the basic format of research, i.e., problem – design – evidence – conclusion (e.g., see Mouton, 1996:71; Leedy & Ormrod, 2010:85-87), and (2) the basic requirements for masters and doctoral research, i.e., independent and original research contributing to the knowledge base of a discipline (e.g., see Delport & De Vos, 2005:45). The second set leans toward particular designs or methods, and the third set leans toward applied research. Parts of curricula that were considered to be leaning towards particular designs or methods, or applied research, are underlined.

Table 8: Thesis curricula (Continued on next page)

Curricula deemed appropriate considering the basic format of research and requirements for masters and doctoral research	**For a four-year bachelors in planning**[12] ***Research design for planners:*** *In this unit, students develop and write a proposal which will form the basis of their research report. The unit will identify and explain the principles behind the formulation of planning research problem or issue, generating clear research aims and questions, formulating a typology based on planning theories and concepts. The unit will expose the students to a range of methodological approaches and identify those research methods appropriate to their own research, the process of fieldwork and the formulation of proposals/conclusions.* ***Research report:*** *This involves the preparation of a report of about 100 pages that addresses a research problem relating to the field of planning. It requires the application of an appropriate typology and research methodology. This unit will also provide the learner with an understanding of various approaches to research methodology within the social sciences, and with a practical introduction to quantitative and qualitative research methods.* (Source: Yearbook; School of Architecture and Planning, University of the Witwatersrand) **For a coursework masters in planning** ***Mini-dissertation:*** *Identification and discussion of a research problem; preparation of a research proposal in the prescribed format for approval by the Head of Department; literature study; design, plan and execution of research in line with approved research proposal; writing up and presentation of research findings; academic article for publication.* (Source: Yearbook; Department of Town and Regional Planning, University of Pretoria)
Curricula leaning towards particular designs or methods (with underlined parts indicative of particular designs or methods)	**For a coursework masters in architecture** ***Project brief development:*** *. . . Decide on the research methods you will need to use, one of which will no doubt be the study of precedents, but possibly also the Descriptive Survey Method and the Historical Method or possibly the Grounded Theory Method. For your kind of thesis (a design thesis) you are not likely to need the Analytical Survey Method nor the Experimental Method . . .* (Source: Study guide; Department of Architecture, University of Pretoria) **For a coursework masters in planning** ***Planning research:*** *Aims; the purpose of this course is to introduce the student to different research approaches. It is of the utmost importance that students at post graduate level have a thorough knowledge of how a research project is tackled, how it is executed and the results presented. Outcomes; applying sound research methodology, planning and conducting accurate surveys and analysis using appropriate methods, compiling appropriate research reports. Syllabus; compilation of questionnaires, execution of pilot studies and sampling procedures, surveys, research design and reporting, forecasting techniques.* (Source: Study guide; Department of Urban and Regional Planning, University of the Free State)

12 Even though the survey pertained to masters and doctoral theses only, thesis curricula for four-year bachelor programmes were also included. I assumed that such curricula would somehow reflect departmental approaches towards masters and doctoral research as well.

Table 8: Thesis curricula (Continued from previous page)

Examples of content leaning towards applied research (with underlined parts indicative of applied research)	**For a coursework masters in architecture** ***Design dissertation:*** *. . . the outcome of Design dissertation is predominantly a set of architectural design drawings (together with scale models) which is assessed by a jury consisting of architects. The written part of this submission should describe the applied research which is routinely undertaken in the development in the understanding of the type of building and the conditions in which it is to be situated and the development of a brief for the design. The hypothetico-deductive model of research is suited to an academic process directed at formulating general principles. It is not well suited to applied research where results of different kinds are synthesised in dealing with a single example. In these proposals, the "research question" is bound to be of the kind "What do I need to know to design a building of this kind?" and a hypothesis would be of the type "I can gather sufficient information to make my approach apt to the design of a building of this type under these conditions". In all instances, this will include issues like the definition of the client, the relation between the proposed building and the architectural and physical environment, the appropriate structure, etc.* (Source: Study guide; School of Architecture, Planning and Housing, University of KwaZulu Natal) **For a coursework masters in architecture** ***Project brief development:*** *. . . The module is geared to help you analyse and assess your subject area and to determine an approach, process or method of study and research appropriate to the nature of your particular design problem, design question or design challenge . . . The expected outcome is a dissertation proposal that sets out your research study and design development strategy. It is in other words a plan of what you will be studying, why it is necessary (background), for whom you are doing it (the client), where it is to be (site and context), when will you be doing it (programme), and above all, how you are going to go about it (research and developmental approach and methods).* (Source: Study guide; Department of Architecture, University of Pretoria) **For a four-year bachelors in planning** ***Beplanningsprojek:*** *. . . die vermoë om vakspesifieke beplanningskennis (beplanningsteorie) en vaardighede (praktykkennis) op grond van `n vooraf goedgekeurde beplanningsonderwerp / projek empiries toe te pas; die vermoë om die teoretiese en empiriese navorsing verbandhoudend met die beplanningsprojek selfstandig en/of in groepverband te beplan, beskryf, data en inligting in te samel, rekenaarmatig te verwerk, te analiseer, te interpreteer en voor te stel sodat dit op ordelike en logiese wyse volgens vakkundige en beplanningspraktyke in `n beplanningsprojek vervat kan word; om op grond van die toepaslike teoretiese beplanningskennis en empiriese ondersoek beplanningsaanbevelings oor die probleme soos dit in die navorsing na vore mag kom, te maak . . .* (Source: Yearbook; Department of Town and Regional Planning, North West University) **For a four-year bachelors in planning** ***Supervised research project:*** *Project identification; proposal writing, problem identification, theoretical framework, project objectives, project methodology, field reconnaissance. Information gathering; primary and secondary data, surveys of people and objects, preliminary analysis, classifications and forecasting. Models; predictive and evaluative. Plan design. Evaluation; partial evaluation techniques; financial appraisal; cost-effectiveness analysis. Dissertation writing and submission.* (Source: Yearbook; Department of Urban and Regional Planning, University of Venda)

The first set of curricula was considered appropriate to get students to do a proper thesis at postgraduate level. The content was clearly based on the basic format of research, while the benefit of presenting curricula in this way is that all the necessary components of a research project are covered, regardless of the field of study. Moreover, such a

format guides a student through the standard process of doing research whilst providing sufficient leeway to use any design or method, which can be basic or applied, quantitative or qualitative, etc., as long as the basic criteria for postgraduate research are met, including independent research within a theoretical framework.

The second set of curricula was considered to lean towards particular designs or methods. For example, the masters thesis in architecture clearly favours the use of "design precedents" (a term used in architecture and planning that refers to informative examples of existing designs) and qualitative designs and methods such as historiography and grounded theory. Students are actually advised against quantitative designs such as analytical surveys and experiments. Moreover, the curriculum refers to "surveys" and "experiments" as methods, although most methodology textbooks regard them as designs. On the other hand, the masters thesis in planning clearly favours surveys and methods associated therewith, such as sampling and questionnaire design.

The third set of curricula was considered to lean towards applied research. The first example in this set, which clearly focuses on types of intervention research to inform architectural designs, actually uses the term "applied research" and goes on to state that the "hypothetico-deductive model" is not suitable for applied research, but rather "an academic process directed at formulating general principles", in other words, basic research within a positivist paradigm. Although this might be so, the issue here is that the curriculum equates particular research contexts, i.e., basic vs. applied research, with particular modes of reasoning. Any mode of reasoning, including deductive, inductive or retroductive, is equally applicable to either basic or applied research, since research contexts do not determine a particular mode of reasoning, while research purposes, methodological approaches, etc., do. Moreover, the first example then proposes a few questions deemed typical of applied research. Yet, Leedy and Ormrod (2010:53) would refer to those questions as "pseudo" questions, since they actually ask questions about procedural or methodological issues that need to be dealt with as part of research design anyhow, such as what data to collect, how to collect it, etc.

The second and third examples in the third set also focus on types of intervention research to inform architectural designs and planning interventions. In the third example, the key outcome of the thesis seems to be the formulation of planning recommendations, more so than doing theoretical research. In the fourth example, a substantial part of the curriculum focuses on evaluation research, including specialised evaluation designs like financial appraisals and cost-effectiveness evaluations.

To conclude; it appears that thesis curricula for architectural and planning programmes in South Africa tend to lean towards applied research as well as designs and methods associated therewith, such as intervention research, evaluation research, project programming, design precedents, etc. Only two examples in Table 8 were deemed to be appropriate for postgraduate research, i.e., if we consider the basic format of research and requirements for postgraduate studies.

Although the relevance of applied research in built environment disciplines is not disputed, and although lecturers are permitted to compile thesis curricula considering their own skills and expertise, the main critique, is that the leaning towards applied research is unnecessary and likely to result in a number of methodological issues. Firstly, students end up equating much of social research in the built environment with applied research, consequently limiting their theses to pursuing practical research aims, such as informing architectural designs, formulating planning guidelines and recommendations, etc., instead of building the knowledge base of the discipline. Secondly, students end up unaware of a wider range of designs applicable to social research in the built environment, especially designs associated with basic research. Thirdly, students end up not discussing their designs and methods properly, since such discussions are generally about how designs and methods influence the validity and reliability of findings, whereas issues of validity and reliability are less of a concern in applied research.

Although the applied nature of built environment disciplines lends itself to practical research, built environment disciplines are still in need of theoretical research to build a knowledge base that can incrementally improve our understanding of built environment disciplines themselves as well as the reality that they deal with. I therefore think De Vos (2005:41-43) and Delport and De Vos' (2005:44-47) argument for a paradigm shift from "exclusively practical problem-solving research towards social scientific research" in the human services professions are equally applicable to the built environment professions. As Delport and De Vos explain, "What we plead for is a greater balance between applied and basic research – in other words focusing not only on practical problem-solving research but also on theory-building research" (2005:45). They then go on to quote Sherman and Reid who said that:

> The profession (i.e. social work) appears to have an imbalance between strategies that produce knowledge and those that direct action. The deficit in knowledge development strategies makes the professions exceptionally vulnerable to borrowing and importing rather

> than developing its own special knowledge, and potential knowledge is continuously being unarticulated and lost. It is desirable that this imbalance be corrected.
>
> (1994:273 as cited by Delport & De Vos, 2005:45)

This "theory-building research" is exactly what we need in built environment theses since students typically conduct their research in the context of academia. Yet, the applied nature of built environment disciplines seems to steer thesis curricula towards applied research.

The "three worlds" framework presented in Chapter 1 can be useful here to see how we may bring about a more desirable situation. According to the framework, World 1 constitutes the "real world" where we have applied research in built environment practices, whereas World 2 constitutes the scientific world where we have basic research in built environment programmes. A greater awareness of this framework can enable students to do applied research, and simultaneously step out of World 1 and into World 2 by asking a theoretical question about the practical component of the research, thereby making the theoretical component of the research primary and the practical component secondary. The implication of all this is that it is critical for the typology to distinguish between designs applicable to basic vs. applied research, or World 1 vs. World 2 research. Having examined thesis curricula and some of the implications thereof, we can now examine theses themselves.

3.3.2 Profile of theses

The profile of theses is examined by looking at (1) their objects of study, (2) the extent to which students included clearly phrased research problems/questions[13] and sub-problems/questions, and (3) the extent to which students discussed their designs and methods.

3.3.2.1 Objects of study

Chapter 2 included a table that listed 12 objects of study in social research in the built environment. These were grouped into three broad categories, including, social objects, built environment objects, and planning and design. Using these broad categories, we

13 Many methodology textbooks use the terms "research problem", "research question", and "research hypothesis" concurrently or even interchangeably, often confusing students as to whether they should formulate all three in one thesis. Although Hofstee (2006:85-87) makes a useful distinction between "problem statements", "thesis statements", "research questions", and "research objectives", all these are actually closely related, while the distinction between them is a question of emphasis, reasoning, and where they occur in a thesis. The term "research problem/question" appears to be the most widely used and is therefore used here.

can get a general idea of thesis topics. Table 9 shows the distribution of objects of study across architectural and planning theses.

Table 9: Objects of study by programme

Objects of study	Programme					
	Architecture		Planning		Total	
	Count	%	Count	%	Count	%
Social objects	11	19.3	15	9.6	26	12.2
Built environment objects	11	19.8	25	16.1	36	17.1
Planning and design	34	60.9	114	74.3	148	70.7
Total	**56**	**100.0**	**154**	**100.0**	**210**	**100.0**

Table 9 shows that the bulk of theses (about 71%) were about planning and design, followed by built environment objects (about 17%) and social objects (including environment-behaviour studies) (about 12%). The bulk of both architectural and planning theses were about planning and design, although architectural theses included a larger percentage about social and built environment objects, whereas planning theses included a larger percentage about planning and design. Table 10 shows the distribution of objects of study over time.

Table 10: Objects of study over time

Objects of study	Period					
	Before 1994		During and after 1994		Total	
	Count	%	Count	%	Count	%
Social objects	16	15.4	10	9.2	26	12.2
Built environment objects	21	20.6	15	13.6	36	17.1
Planning and design	66	64.0	82	77.2	148	70.7
Total	**103**	**100.0**	**107**	**100.0**	**210**	**100.0**

Table 10 shows that, whereas the proportions of theses about social and built environment objects decreased during and after 1994, the proportion of theses about planning and design increased. This trend may be indicative of three things. Firstly, it suggests that sociological topics have become less popular considering that the heyday of these topics would have been around the 1970s and 80s. Secondly, the proportion of

architectural theses, which includes a focus on built environment objects more so than planning theses, have decreased relative to an increase in planning theses during and after 1994. Thirdly, planning and design topics have become more popular considering that the political transition in South Africa would have brought about a renewed interest in planning and design disciplines and professions themselves, especially the political, institutional, procedural, and educational aspects thereof. Indeed, Talen and Ellis argue that postmodernism in planning has deflected attention away from normative issues toward procedural issues in recent decades (2002:38).

Nevertheless, these broad categories only provide a generalised picture of what theses were about and do not account for the fact that topics tend to be highly idiosyncratic. As pointed out earlier, built environment departments in South Africa tend to have loosely defined research areas. Consequently, students may identify almost any topic provided it roughly fits a department's research area and a potential supervisor approves of it. Suffice to say that there are probably as many objects of study in theses as there are students. Table 11 therefore provides five examples of titles for each object of study randomly selected from the sample of 210 theses. (The titles of all 210 theses can be seen in Appendix 2.)

Table 11: Examples of thesis titles

Social objects	`N MODEL VIR DIE VOORSPELLING VAN INTERNE MIGRASIE, MET BESONDERSE VERWYSING NA DIE SUID-AFRIKAANSE BLANKES MIES VAN DER ROHE: AN EXPLORATION OF HIS ARCHITECTURAL DOCTRINES AND THE FACTORS AND CIRCUMSTANCES THAT MIGHT HAVE INFLUENCED THEM A STUDY OF DRIVER BEHAVIOUR WITH REGARD TO THE EFFECTIVENESS OF TRAFFIC CONTROL AND THE ROAD COMMUNICATION SYSTEM THE NEEDS, ATTITUDES AND PREFERENCES OF FLAT DWELLERS IN METROPOLITAN JOHANNESBURG AND THE PLANNING IMPLICATIONS THEREOF THE BACKGROUND, ARCHITECTURAL PHILOSOPHY AND WORK OF HELMUT WILHELM ERNST STAUCH
Built environment objects	DIE ROL VAN OOPRUIMTES BINNE METROPOLITAANSE VERBAND: RIGLYNE VIR BEPLANNING THE MAKING OF LOBBY ARCHITECTURE DECORATION AND SCULPTURE VORMGEWENDE INVLOEDE OP DIE ONTWIKKELING VAN MOSKEE - ARGITEKTUUR BINNE DIE HEILIGE SIRKEL VAN DIE KAAP TOT 1950 DIE LIGGING, GROOTTE EN UITLEG VAN AFTREE-OORDE ONTWIKKEL DEUR PRIVAATINISIATIEF SYNAGOGUES ON THE WITWATERSRAND AND IN PRETORIA BEFORE 1932- THEIR ORIGIN, FORM AND FUNCTION
Planning and design	`N ONDERSOEK NA SUID-AFRIKAANSE TENDENSE IN ONTWIKKELINGSBEHEER, MET SPESIFIEKE FOKUS OP SONERINGSKEMAS IN DIE WES-KAAPPROVINSIE INDUSTRIAL DECENTRALISATION AND REGIONAL DEVELOPMENT IN SOUTH AFRICA MIDDESTEDELIKE VERVAL EN HERNUWING: DIE SENTRALE SAKE KERN VAN BLOEMFONTEIN AS VERVALSONE MET BEPLANNINGSRIGLYNE VIR VERNUWING DIE GEÏNTEGREERDE STEDELIKE VOETSLAANPADBEPLANNINGSMODEL VIR DIE VOLHOUBARE BEWARING, BENUTTING EN BESTUUR VAN STEDELIKE OOP RUIMTES SPACE, TRADITION AND COMPREHENSIVE HEALTH CARE: ARCHITECTURE OF PRIMARY HEALTH CARE FACILITIES IN RURAL SOUTH AFRICA

Table 11 shows that built environment theses in South Africa are indeed diverse. The structure and quality of these theses are subsequently examined.

3.3.2.2 Extent to which students included clearly phrased research problems/questions and sub-problems/questions

The inclusion of clearly phrased research problems/questions is critical since an entire thesis, including its purpose, objectives, design, and conclusions, all revolve around the

research problem/question. The research problem/question is already an indication of what the overall aim of the research is likely to be, as well as what the theoretical or practical contribution of the thesis is likely to be. Also, the more clear the research problem/question, the more clarity is lent to what the design of the research ought to be. Table 12 shows the extent to which students included clearly phrased research problems/questions across architectural and planning theses.

Table 12: Extent to which students included clearly phrased research problems/questions by programme

Clearly phrased research problem/question included	Programme					
	Architecture		Planning		Total	
	Count	%	Count	%	Count	%
Yes	31	67.7	108	84.2	139	79.8
No	15	32.3	20	15.8	35	20.2
Total	**46**	**100.0**	**128**	**100.0**	**174**	**100.0**

Note: Data exclude all theses from which it was unclear whether clearly phrased research problems/questions were included or not.

Table 12 shows that almost 80% of built environment theses in South Africa included clearly phrased research problems/questions, whereas about 20% did not. Although 80% is a large percentage, I would argue that *every* thesis must include a clear research problem/question, especially at masters and doctoral level. It is therefore actually a bit worrisome that as many as 20% of theses were completed and passed not having included a clearly phrased research problem/question. Below is an example of a research problem that was not clearly phrased:

> Die doel van die ondersoek is om deur middel van literatuurstudie kennis en insig te verkry omtrent: (1) die mens binne ruimtelike verband en (2) die verhouding of interaksie wat daar tussen die mens en sy omgewing (mag) bestaan.
>
> (Extract from a thesis)

The research problem is merely to “know more about people and their relationship with their environment” through a literature study. Apart from no specification of what relationship to study and why, Leedy and Ormrod (2010:2) would also refer to such a research problem as research for mere “self enlightenment”. Contrast the above with the following concise yet clear research problem:

> The purpose of the study is to develop a model for planning the effective integration of the lower income community group into the urban area of Centurion.
>
> (Extract from a thesis)

The student then followed on immediately with a number of research objectives (sub-problems) to address the purpose (research problem):

> The [objectives] of the study are to: (1) indicate how income and ethnicity can result in separation of various population groups within a city, (2) give a literary review of different models of urban structure, the factors responsible for them and how these influence residential and socio-economic patterns, (3) to give a literary review of the apartheid city . . . [etc]
>
> (Extract from a thesis)

The extent to which students included clearly phrased sub-problems/questions is discussed in more detail later.

A significantly larger percentage of planning theses included clearly phrased research problems/questions, whereas a significantly larger percentage of architectural theses did not (χ^2 (1, N = 174) = 6.074, p = .01).[14] Architectural theses are therefore more problematical in this regard. For example, a number of architectural theses merely discussed a particular architectural style or the work of a renowned architect, or analysed a site or precedent to inform a particular design, with no indication of the actual problem or question, or how the thesis contributed to the knowledge base of architecture. If we were to improve the methodological rigour of architectural theses, this would be a critical starting point – to get postgraduate architectural students to shift their thinking from design and representation to questioning and examining. Apart from comparing architectural and planning theses, it is also important to compare how theses have changed over time. Table 13 shows the extent to which students included clearly phrased research problems/questions over time.

[14] Since statistical significance was calculated at the 95% confidence level, there was less than a 5% probability that differences in percentages were due to chance factors, and that the same differences did not exist in the "universe" of theses in the country.

Table 13: Extent to which students included clearly phrased research problems/questions over time

Clearly phrased research problems/questions included	Period					
	Before 1994		During and after 1994		Total	
	Count	%	Count	%	Count	%
Yes	52	65.0	87	92.4	139	79.8
No	28	35.0	7	7.6	35	20.2
Total	**80**	**100.0**	**94**	**100.0**	**174**	**100.0**

Note: Data exclude all theses from which it was unclear whether they included clearly phrased research problems/questions or not.

Fortunately, a significantly larger percentage of theses during and after 1994 (about 92%) included clearly phrased research problems/questions compared to theses before 1994 (65%) (χ^2 (1, N = 174) = 20.419, p = .00). Consequently, the percentage of theses without clearly phrased research problems/questions declined significantly during and after 1994. While it is not clear why theses have improved over time in this regard, we may ascribe it to a number of possible factors, including a stronger relationship between social sciences and built environment disciplines, or simply an increase in research standards and practices in built environment programmes, etc.

Research problems/questions are usually broken down into sub-problems/questions. The sub-problems/questions are then meant to constitute standalone pieces of research that contribute towards solving or addressing the main research problem/question (as shown in the preceding example). In effect, it is actually the sub-problems/questions that are researched rather than the main research problem/question. The sub-problems/questions usually translate into research objectives.

Not all studies necessarily include sub-problems/questions. Studies focusing on topics that are relatively unknown, such as exploratory studies, may well include a main research problem/question only. This may be because the researcher does not know enough about the topic in order to formulate intelligible sub-questions/problems. Still, most studies include sub-problems/questions or research objectives. It is therefore also important to consider the extent to which students included clearly phrased sub-problems/questions. Table 14 shows the extent to which students included clearly phrased sub-problems/questions across architectural and planning theses.

Table 14: Extent to which students included clearly phrased sub-problems/questions by programme

Clearly phrased sub-problems/questions included	Programme					
	Architecture		Planning		Total	
	Count	%	Count	%	Count	%
Yes	32	70.7	107	83.8	139	80.4
No	13	29.3	21	16.2	34	19.6
Total	**45**	**100.0**	**128**	**100.0**	**173**	**100.0**

Note: Data exclude all theses from which it was unclear whether they included clearly phrased sub-problems/questions or not.

Table 14 shows that about 80% of theses included clearly phrased sub-problems/questions, which is comparable to the proportion of theses that included research problems/questions. Theses that included clearly phrased research problems/questions are likely to have included sub-problems/questions as well, since it would not have made sense for theses to include sub-problems/questions, but no research problems/questions. Although planning had a larger percentage of theses that included clearly phrased sub-problems/questions compared to architecture, the differences in percentages are not statistically significant at the 95% confidence level (χ^2 (1 N = 173) = 3.285, p = .07).[15] Table 15 shows the extent to which students included clearly phrased research sub-problems/questions over time.

Table 15: Extent to which students included clearly phrased sub-problems/questions over time

Clearly phrased sub-problems/questions included	Period					
	Before 1994		During and after 1994		Total	
	Count	%	Count	%	Count	%
Yes	61	71.7	79	88.7	139	80.4
No	24	28.3	10	11.3	34	19.6
Total	**85**	**100.0**	**89**	**100.0**	**173**	**100.0**

Note: Data exclude all theses from which it was unclear whether they included clearly phrased sub-problems/questions or not.

Table 15 shows that a significantly larger percentage of theses during and after 1994 included clearly phrased sub-problems/questions (χ^2 (1 N = 173) = 7.991, p = .01). Again,

15 Thus, there was more than a 5% probability that differences in percentages were due to chance factors and that the same differences did not exist in the "universe" of theses in the country.

this trend is comparable to the percentage increase in theses during and after 1994 that included clearly phrased research problems/questions.

3.3.2.3 Extent to which students discussed their designs and methods

The extent to which students discussed their designs and methods is an indication of the extent to which they were reflective by engaging and explicating such designs and methods. It is of course also an indication of the extent to which examiners would have been able to assess the methodological rigour of theses. The more substantive the discussions of designs and methods, the more rigorous the methodologies of theses are likely to be, and *vice versa*. Earlier, I raised the point that the leaning towards applied research in thesis curricula could have resulted in students not discussing their designs and methods properly, since such discussions are associated more with basic research where the epistemic imperative is to produce "truthful" rather than "practical" knowledge.

Table 16 shows the extent to which students discussed their designs and methods across architectural and planning theses. Each thesis was examined to see whether students discussed their designs and methods (1) in a standalone chapter, or (2) in a standalone section as part of another chapter, or whether discussions were limited elsewhere within the text, or (3) whether there was no discussion at all.

Table 16: Extent to which students discussed their designs and methods by programme

Discussion of designs and methods	Programme					
	Architecture		Planning		Total	
	Count	%	Count	%	Count	%
In a standalone chapter	4	7.1	24	15.9	28	13.5
In a standalone section / Limited within the text	28	50.4	109	71.0	138	65.5
None	24	42.5	21	13.1	44	21.0
Total	**56**	**100.0**	**154**	**100.0**	**210**	**100.0**

Table 16 shows that only about 14% of all built environment theses in South Africa included discussions in a standalone chapter. This, despite the fact that widely used textbooks, such as the one by Leedy and Ormrod, propose that the "methods" part of

almost any thesis should constitute a standalone chapter (2010:302-303).[16] The bulk of theses (about 66%) included discussions in a standalone section or limited within the text, while as much as 21% of theses included no discussion at all. A significantly larger percentage of planning theses included discussions in a standalone chapter compared to architectural theses, while a significantly larger percentage of architectural theses included no discussion at all (χ^2 (2, N = 210) = 22.331, p = .00).

Architectural theses therefore fell significantly short of planning ones when it came to discussing designs and methods. However, an additional cross-tabulation and Chi-square test revealed that a significantly larger percentage of architectural compared to planning theses was based on nonempirical research (χ^2 (1, N = 199) = 15.465, p = .00). Theses based on nonempirical research typically include less of a discussion of designs and methods since there are usually no empirical data of which to discuss the collection, analysis and interpretation. However, it can also be argued that even nonempirical theses ought to include some discussion of the overall design of a study, since research design does not only deal with issues of how empirical data were dealt with, but also with issues of research aims and purposes, process, logic, mode of reasoning, etc. Moreover, a student may at least clarify the *type* of nonempirical study, such as whether it constituted a literature review, the construction of a theory, a philosophical or normative argument, etc.

The data therefore seem to support my point that a leaning towards applied research in thesis curricula may have contributed to many students not discussing their designs and methods properly. However, have built environment theses improved over time with regard to the extent to which students discussed their designs and methods? Table 17 shows this over time.

16 Theses included very few references to methodology textbooks, while Leedy and Ormrod's text, *Practical research: Planning and design*, appeared to be referenced more than any other text.

Table 17: Extent to which students discussed their designs and methods over time

Discussion of designs and methods	Period					
	Before 1994		During and after 1994		Total	
	Count	%	Count	%	Count	%
In a standalone chapter	9	8.2	20	18.6	28	13.5
In a standalone section / Limited within the text	65	63.4	72	67.5	138	65.5
None	29	28.4	15	13.9	44	21.0
Total	**103**	**100.0**	**107**	**100.0**	**210**	**100.0**

Table 17 shows that a significantly larger percentage of theses during and after 1994 included discussions in a standalone chapter compared to theses before 1994, while a significantly larger percentage of theses before 1994 included no discussion at all (χ^2 (2, N = 210) = 8.912, p = .01). Built environment theses have therefore clearly improved over time in this regard. However, there is room for improvement, since as much as about 14% of all theses during and after 1994 still included no discussion at all.

It should be noted that the quality of methodological discussion varied considerably between theses, while two further observations can be made in this regard. Firstly, most students who discussed their designs and methods typically used the heading "methodology" or "research methodology". However, Chapter 1 defined "research methodology" as "the study of research designs and methods", and "research methods" as "actual techniques or procedures used to gather and analyse data". Thus, more appropriate headings would be "research procedures" or "research design and methods", since students are not reporting a study of designs or methods *per se*, they are merely reporting the *use* of particular designs and methods, even though they may do so with some critical reflection and recommendation. The conflation of the terms "methodology" and "methods" is perhaps an indication of a disregard in the built environment field to consider "research methods" as something that is both used and studied.

Secondly, a more coherent discussion of designs and methods would, in my mind, first include an explication of the research design, followed by a stepwise discussion of the methods used as the research unfolded, including methods for data collection, analysis and interpretation. For example:

> The survey was undertaken under 505 schoolchildren in 18 schools in the traditional white suburbs of Pretoria. The survey employed both

> written descriptions and the drawing of cognitive maps of the respective environments on both city and neighbourhood level. The questionnaires were analysed and codified in terms of the description of the relevant environments given by the respondents, their likes and dislikes, suggestions for improvement tendered and the completeness of the sketches of their neighbourhood and of greater Pretoria. The analysis was done in terms of Kevin Lynch's elements of city form, namely routes, nodes, borders, landmarks and districts. These factors represent the dependent variables in the investigation. The statistical relationship between the dependent and independent variables was determined by means of the chi-squared test with the independent variables being the factors established in terms of the theories of Holahan and Piaget . . .
>
> (Extract from a thesis)

Moreover, the design and methods should preferably be discussed for each sub-problem/question or research objective, possibly in the form of a matrix (e.g., see Choguill, 2005:615-626). This would help students to think through their different procedures and to structure their discussions more logically. As De Vaus points out:

> Failing to distinguish between design and method leads to poor evaluation of designs. Equating cross-sectional surveys with questionnaires, or case studies with participant observation, means that the designs are often evaluated against the strengths and weaknesses of the method rather than their ability to draw relatively unambiguous conclusions . . .
>
> (2001:9)

Yet, very few students included a discussion that followed the approach suggested above. Discussions more often than not simply stated whether the research was quantitative or qualitative. Where they provided some detail, it tended to be limited to discussing methods for data collection. For example:

> The research takes a combination of quantitative and qualitative approach through the extraction of relevant data from different sources such as the population census, District Development Plans, National Development Plans, National Settlement Policy . . . It also involved broad informal interviews with various stakeholders to establish their position as regard the effectiveness of the current National Settlement Policy and to what extent they are working to improve on the policy.
>
> A broad background of the various aspects of pedestrian malls was obtained from an in depth literature study, while quantitative and qualitative data on the St George's Street Mall was obtained from personal interviews and business and residential survey questionnaires, respectively. The research was designed to provide a

> broadly based set of data that would provide a sound statistical basis for strategic analysis.
>
> (Extracts from theses)

Where students did mention the use of a particular design, such as a survey or case study, they seldom elaborated on the actual design of the survey or case study, or what their choice of design had to do with maximising the validity of their findings. Moreover, many students appear to have used the term “case study” simply to denote the setting for their research with little consideration of actual case study designs and methods. For example:

> This project is based on (1) a literature study of the role and function of residential streets and the *woonerf* concept, (2) a case study of an existing *woonerf* scheme, Fountain Village in the Western Cape, (3) informal interviews with residents of Fountain Village, and (4) personal communication with town planners involved with *woonerf* schemes.
>
> (Extract from a thesis)

In addition, many students appear to have used the term “literature review” to denote the collection of secondary material as part of the empirical research instead of reviewing academic literature to locate their theses. For example:

> Literature Review: Consulting a large variety of literature established a great deal of interest. Broad perspectives were found to exist on the subject matter . . . Researching the Internet further provided interesting ideas on the phenomenon. International and national sources provided a better understanding and more detailed information. Literature primarily consists of research publications, academic journals, books, acts, policies and reports.
>
> (Extract from a thesis)

Therefore, although the proportion of theses with discussions of designs and methods included as a standalone chapter increased significantly, theses still required greater explication of designs. A proper explication of the research design as early as the proposal stage will also get students to consider more carefully issues of validity and reliability before they start their research. Moreover, a better explication of design, not only in thesis proposals, but also in funding proposals and publication manuscripts, would also make the task of supervisors, funding committees, and peer-reviewers easier to assess and decide upon the methodological rigour of the research. Now that we have a better idea of the level of methodological discussion in theses, it is now possible to

examine the methodological characteristics of theses whilst considering their level of methodological discussion.

3.3.3 Methodological characteristics of theses

The methodological characteristics of theses are examined by looking at (1) the extent to which students included theoretical vs. practical research aims, and (2) the coherence between methodological paradigms and approaches in theses.

3.3.3.1 Extent to which students included theoretical vs. practical research aims

In the discussion about the teleological dimension of social research in Chapter 2, a distinction was made between theoretical and practical research aims. Theoretical aims typically involve predicting and understanding social reality, etc., while practical aims involve improving quality of life, emancipating certain groups, etc. Moreover, theoretical aims were associated with explanatory, interpretative, exploratory and descriptive research purposes, while practical aims were associated with formative, evaluative and emancipatory purposes. It is acknowledged that social research in the built environment seldom conforms to either pure theoretical or practical research, yet, as argued in Chapter 2, it is believed that such aims do exist on a continuum and that any study is more-or-less based on one or the other.

Earlier, I pointed out that the leaning towards applied research in thesis curricula could have resulted in students equating much of built environment research with applied research, consequently limiting their theses to pursuing practical research aims, whereas the context of postgraduate studies actually requires theoretical research aims. Table 18 shows the extent to which students included theoretical vs. practical research aims across architectural and planning theses.

Table 18: Extent to which students included theoretical vs. practical research aims by programme

Inclusion of theoretical vs. practical research aims	Programme					
	Architecture		Planning		Total	
	Count	%	Count	%	Count	%
Theoretical	20	59.1	20	17.0	40	26.2
Practical	6	19.4	55	46.1	61	40.3
Multiple	7	21.5	44	36.9	51	33.5
Total	**33**	**100.0**	**119**	**100.0**	**152**	**100.0**

Note: Data exclude all theses based exclusively on nonempirical or metaresearch, as well as theses from which it was unclear what the research aims were.

Clearly, the data in Table 18 support this point by showing that the bulk of theses (about 40%) included practical research aims only, whereas only about 26% included theoretical aims only. However, about 34% included both, which suggests that as many as about 60% of theses included some theoretical aims. A significantly larger percentage of architectural theses included theoretical aims, whereas a significantly larger percentage of planning theses included practical aims (χ^2 (2, N = 152) = 25.807, p = .00).

Planning theses have therefore been particularly prone to result in studies that were limited to practical aims. These typically included studies that aimed to formulate or evaluate planning interventions, such as formulating normative planning guidelines and recommendations, or evaluating plans common to the current South African planning system, such as Integrated Development Plans, Spatial Development Frameworks, etc. These studies do not really contribute to the theoretical knowledge base of planning itself or of the reality that planning or planners deal with. The leaning towards applied research in thesis curricula therefore clearly reflects in planning theses across the country. For example:

> The overall goal of the research is to suggest a framework for a different approach to national settlement planning in Botswana.
>
> The purpose of this report is therefore to conduct a thorough analysis of forms, causes and effects of growth within the municipality in order to develop a long-term strategy for guiding growth within the municipality.
>
> The purpose of this study was to conduct research with the aim of establishing uniform definitions and a set of development guidelines that would also give details on the procedures and criteria for

> evaluating the applications of guesthouse establishments. Such guidelines would be used to formulate a guesthouse policy proposal that could be distributed to all municipalities, consultants and other relevant role players in the Western Cape.
>
> Die doel van hierdie studie is om te bepaal of die gebied wat bestudeer word `n verspreide stad vorm en indien wel, in watter ontwikkelingsfase dit verkeer. Op grond van hierdie resultate van die ondersoek sal riglyne vir die toekomstige ontwikkeling van die gebied voorgestel word. Tweedens sal gepoog word om maatreëls te identifiseer wat aanleiding kan gee tot `n alternatiewe ekonomiese basis vir die gebied.
>
> (Extracts from theses)

However, contrast the above with the following two examples of theoretical aims:

> The purpose of this study was to find the extent to which the Westlake project has succeeded in addressing the problem of low cost housing. The study employs Patsy Healey's institutional model of the development process as an analytical framework in order to understand how the development of the project unfolded. The study is presented as a qualitative case and its reporting takes a form of a narrative.
>
> The study is a participant observer study of the transformation of the city planning function of the City of Tshwane Metropolitan Municipality from 5 December 2000 to 30 June 2002. The study is rendered in the form of a narrative told in the first person. The focus of the story is on how power and the aspiration to power influenced the actions of the people in the employ of the municipality and the relations between them during the study period. In this regard the story draws heavily on the work of Bent Flyvbjerg.
>
> (Extracts from theses)

Occasionally, theoretical aims were stated in such a way to clarify in addition whether the research was predominantly deductive or inductive, as the following two examples respectively illustrate:

> The aim of this study is firstly to construct a model by making use of existing literature regarding the phenomenon in terms of which territoriality at neighbourhood-level can be described and explained. Secondly, the aim is to verify the model through the use of data collected in surveys carried out in "white neighbourhoods" of different socio-economic status in Pretoria.
>
> The purpose of the research was to determine how other development corridor projects are dealt with in terms of planning and development . . . Each of the researched development corridor projects were studied

> in terms of their underlying project focuses, project strategies, institutional arrangements and success stories. The results of the research were used for the formulation of a theoretical framework that could be used as basis for corridor development.
>
> (Extracts from theses)

The question may arise why an emphasis on applied research or practical aims in built environment theses should be of any concern. The fact of the matter is that architecture and planning students write their theses in the context of academia, which is traditionally, and rightly so, associated with basic research in which higher premiums are placed on the extent to which research is valid, reliable and contributing to the knowledge base. As expected, examiners assess their theses along criteria that are more appropriate to basic research, and as a result, architectural and planning theses are often heavily penalised. This dynamic is actually currently taking place at the University of KwaZulu Natal.

At this university, all post-graduate research is nowadays coordinated at faculty level. This requires research committees to review all masters and doctoral proposals. Following the restructuring of the university and the merger with the University of Durban-Westville, the School of Architecture, Planning and Housing moved to the Faculty of Humanities, Development and Social Sciences. Consequently, committees consisting mainly of social scientists now review all masters and doctoral proposals for architectural, planning and housing theses along the same criteria as those for proposals from the more basic or descriptive disciplines, like psychology, sociology, geography, etc.

As a result, proposals for architectural, planning and housing theses suffer high rejection rates and many are returned to the School for revisions, especially proposals for architectural theses. Criticisms levelled against proposals for architectural theses typically include (1) a poor understanding of research, in particular research required at postgraduate level, (2) an absence of research problems/questions, let alone theoretical problems/questions, (3) a disregard for research ethics, and (4) poor editing and formatting. In fact, the Faculty had become very concerned over the methodological rigour of masters and doctoral proposals from the School of Architecture, Planning and Housing (Johan Jacobs, personal discussion, 18 July 2007).

It remains to be seen whether there has been any shift in the balance between theoretical and practical aims in built environment theses. Table 19 shows the extent to which students included theoretical vs. practical research aims over time.

Table 19: Extent to which students included theoretical vs. practical research aims over time

Inclusion of theoretical vs. practical research aims	Period					
	Before 1994		During and after 1994		Total	
	Count	%	Count	%	Count	%
Theoretical	16	24.6	24	27.3	40	26.2
Practical	29	44.3	32	37.3	61	40.3
Multiple	21	31.1	30	35.4	51	33.5
Total	**66**	**100.0**	**86**	**100.0**	**152**	**100.0**

Note: Data exclude all theses based exclusively on nonempirical or metaresearch, as well as theses from which it was unclear what the research aims were.

Table 19 shows that the proportion of theses with theoretical aims increased slightly from about 25% before 1994 to about 27% during and after 1994, while the proportion of theses with practical aims decreased from about 44% to about 37%. However, these changes were not statistically significant (χ^2 (2, N = 152) = .956, p = .62). Thus, there is no clear indication whether built environment theses in South Africa are becoming more theoretical rather than practical.

The emphasis on applied research or practical aims is not only the result of architectural theses tending to result in inquiries such as design programming, site analyses, precedent studies, etc., but also seems to be the result of the changing nature of planning research in South Africa. It has been said that planning research in South Africa has become rather political, focusing on the technical and practical implementation of policy, leaving little room nowadays for the "science and critical thinking" in planning research (Manie Geyer, personal discussion, 29 March 2007). Still, planning research, even at masters and doctoral levels, could have both theoretical and practical aims. Students should be able to step out of World 1 and into World 2 and ask a theoretical question about the practical component of the research, while the practical component then becomes secondary. This is similar to what Delport and De Vos meant when they wrote about "forming practice-generalisations which underlie the process of building a scientific basis for a profession" (2005:45). Despite this view, the custom in some planning programmes remains for postgraduate students to do practical research, while only the more academically oriented students are encouraged to do theoretical research (Manie Geyer, personal discussion, 29 March 2007).

Having looked at the extent to which students included theoretical vs. practical aims, the next methodological characteristic to consider is the coherence between methodological paradigms and approaches.

3.3.3.2 Coherence between methodological paradigms and approaches

The last methodological issue to examine is the extent to which there is sufficient coherence between methodological paradigms and approaches in theses based on empirical research. Thus, theses based exclusively on nonempirical or metaresearch were excluded from this analysis. Chapter 2 described “methodological paradigms” as broad philosophies or coherent systems of thinking on how to conduct research, which directly or indirectly influence various aspects of empirical research, including the role of theory, methods, objectivity, values, ethics, etc. The main methodological paradigms in the social sciences were then identified as post-positivism, interpretative social science, critical social science (in which feminism and postmodernism can be included), and pragmatism.

One of the characteristics of theses that could be cross-tabulated with their respective paradigms was their “methodological approaches”, which included quantitative vs. qualitative vs. mixed-method approaches. The reason for examining this specific relationship is that particular methodological paradigms are concomitant to particular approaches; probably more so than other characteristics such as aims, purposes, sources of data, etc. Thus, the extent to which empirical theses featured methodological paradigms in relation to concomitant approaches served as an indication of the methodological coherence of theses. Simply put, theses that were evidently in a post-positivist paradigm ought to have featured quantitative approaches, theses in an interpretative paradigm ought to have featured qualitative approaches, while theses in a pragmatic or critical social science paradigm ought to have featured mixed-method or participatory approaches. Table 20 shows the extent to which there is coherence between methodological paradigms and approaches in empirical built environment theses in South Africa.

Table 20: Coherence between methodological paradigms and approaches

Methodological approaches	Methodological paradigms							
	Post-positivist		Interpretative social science		Critical social science; Pragmatic		Total	
	Count	%	Count	%	Count	%	Count	%
Quantitative	10	93.2	0	0.0	4	3.5	14	10.0
Qualitative	0	0.0	9	85.7	55	45.8	64	45.4
Mixed-method	1	6.8	2	14.3	61	50.7	63	44.6
Total	**11**	**100.0**	**11**	**100.0**	**120**	**100.0**	**141**	**100.0**

Notes: Data exclude all theses based exclusively on nonempirical or metaresearch, as well as theses from which it was unclear what the methodological paradigm or approach were. "Critical social science" included feminist and post-modern theses.

Indeed, a significantly larger percentage of empirical theses in a post-positivist paradigm featured quantitative approaches (as highlighted in the table) compared to the other two paradigms. Similarly, a significantly larger percentage in an interpretative paradigm featured qualitative approaches compared to the other two paradigms, while a significantly larger percentage in a pragmatic or critical social science paradigm featured mixed-method approaches (χ^2 (4, N = 141) = 93.637, p = .00).[17]

Moreover, not only is the relationship statistically significant, a contingency coefficient – a measure of association used in nonparametric statistics – also shows that the relationship is quite strong (C = .630) (given that contingency coefficients vary between -1 and +1). In fact, there was no thesis in the post-positivist paradigm that featured a qualitative approach, while there was also none in the interpretative paradigm that featured a quantitative approach. Thus, there appears to be methodological coherence in empirical built environment theses in South Africa as far as associations between methodological paradigms and their concomitant approaches are concerned.

However, Table 20 also shows that data were available for only 141 of the 210 surveyed theses, which means that it was not possible to determine the methodological paradigm and/or approach of a large proportion of empirical theses. Here, another methodological issue emerges from the survey of theses, namely the issue of *clarity*. Scholars in the built environment field, however, argue that it is important for postgraduate students and

17 Chi-square results may be invalid due to low counts in certain cells.

researchers to be clear with regard to their research philosophies and methods in addition to making sure that their philosophies and methods are coherent with each other.

> It is very important that researchers in these applied fields of enquiry, collectively termed the built environment, make their methodological and epistemological assumptions as clear as possible. This, of course, is particularly important for those defending a doctoral thesis. These decisions should not amount to a fashionable *pick and mix* of terms, but should be grounded in the genuine, and defendable, thoughts of the researcher and the subject of inquiry. It is also important that the whole methodological position put forward by the researcher is coherent. For example, to argue that your research is based on anti-realist ontological assumptions and some form of post-modern theoretical position is likely to undermine a methodology based on questionnaire surveys including significance testing of Likert scales. It should be clear that in designing a methodology to investigate a problem, the researcher is building on an edifice of assumptions around claims to knowledge and these assumptions should be explored and justified where appropriate.
>
> (Knight & Turnbull, 2008:73)

Therefore, although there appeared to be coherence between methodological paradigms and approaches in empirical theses, it is limited to theses for which both the methodological paradigm and approach could be determined. For example:

> Traditional historiographic research is challenged by the very nature of post-modernism, which, in terms of one of its less radical viewpoints, views history not so much as truth-seeking or objective activity, but rather re-interpreting it as story telling and as history reflective of itself – an approach that have determined the nature and style of this study.
>
> (Extract from a thesis)

It should be noted that methodological paradigms and approaches could not be determined from a large proportion of theses, raising the issue of philosophical and methodological clarity within theses. Even though it is not customary for students or even professional researchers to state their methodological paradigms and approaches explicitly, it should nevertheless somehow be clear from other parts of the thesis.

3.4 SUMMARY AND CONCLUSION

The objective of this chapter was to explore methodological issues in social research in the built environment, with postgraduate built environment theses in South Africa providing an empirical basis from which to do so. Thesis curricula in some built environment programmes were collected and a sample of masters and doctoral social

research theses across all architectural and planning programmes in South Africa was surveyed. Methodological issues were identified by examining thesis curricula, as well as the profile and methodological characteristics of theses.

Following the examination of thesis curricula, it was found that many curricula tended to lean towards applied research and concomitant designs and methods, even though students are meant to do their theses in the context of basic research. It was subsequently argued that students would end up (1) equating much of social research in the built environment with applied research, (2) being unaware of a wider range of designs applicable to social research in the built environment, and (3) not discussing their research designs and methods properly.

Following the examination of the profile and methodological characteristics of theses, it was found that (1) about 20% of theses included no research problem/question or sub-problem/question, (2) almost 80% of theses included some discussion of research designs and methods, although students could improve the quality of discussions, (3) the bulk of theses pursued practical aims, with no real sign of change, and (4) a proportion of theses showed methodological coherence.

Methodological issues in social research in the built environment therefore boil down to (1) finding a better balance between basic and applied research and distinguishing properly between these two contexts and their concomitant methodological considerations, and (2) providing a better clarification of research problems/questions, paradigms, designs and methods. The question now is whether a typology of designs for social research in the built environment can address some of these issues.

Such a typology may address some of these issues, provided it includes designs applicable to both basic and applied research presented in the form of a matrix showing the respective designs in relation to their concomitant methodological considerations. Should the typology exhibit such qualities, it may well serve as a pedagogical tool helping students to (1) distinguish between basic and applied research, (2) identify and explicate an appropriate design, and (3) clarify the methodological paradigm and approach associated with their chosen design. Another scholar in the built environment field also expressed the idea of constructing a typology of designs in the form of a matrix:

> I do not see a need for a unique research methodology for planning, but rather a research systems approach in the form of a matrix. The main objective of such a matrix should be to empower planners to use

> appropriate methods in terms of the objectives of their research, whatever they may be.
>
> (Carel Schoeman, personal discussion, 29 March 2007)

Indeed, this “research systems approach in the form of a matrix” points toward such a typology. Moreover, the scholar also sees such a typology as having potential decision-making benefits to “empower” planners, i.e., planning students, researchers, and practitioners, to use appropriate designs considering their research objectives. The following chapter identifies designs applicable to social research in the built environment as part of the process of constructing this typology.

Chapter 4 Designs applicable to social research in the built environment

4.1 INTRODUCTION

Chapter 1 argued that built environment disciplines are less concerned with research methodology, and have never really developed their own methodology or designs and methods. Instead, they borrow almost all the designs and methods they use from other fields, especially the social sciences. Consequently, the methodological literature in the built environment field is not as developed as that of the social sciences. In particular, the literature lacks sources that discuss a comprehensive range of prototypical designs applicable to social research in the built environment, while existing sources tend to discuss certain designs as applied to certain fields and contexts only. Yet, to construct the typology, applicable designs had to be identified from the literature.

The objective of this chapter is to identify designs applicable to social research in the built environment in order to see which "designs" to include in the typology and which not. The more specific objectives are to (1) review methodological literature in the built environment field and, following this review, (2) index applicable research design subtypes,[18] (3) cluster subtypes into prototypical designs, and (4) outline such designs in terms of their subtypes, specialised subtypes, and areas of application in built environment research and practice.

For the typology to improve researchers' decision-making, it has to present them with a comprehensive range of designs. If the typology excludes any design that may be applicable, then the ability to make rational choices is obviously restricted. It was therefore important to review all relevant methodological literature and to index, cluster, and outline designs systematically.

The contribution of this chapter first consists in a review of methodological literature in the built environment field. Currently the terrain of this literature is rather vague. (Perhaps the field needs a journal dedicated to methodology to provide more coherence.) The more important contribution, however, consists in the identification of applicable designs.

[18] In order to identify a comprehensive range of applicable designs, a lower unit of "research design", namely "research design subtypes", served as the main unit of analysis in this chapter to ensure a firmer basis and more exhaustive coverage of applicable designs. For example, "surveys" consist of both cross-sectional and longitudinal subtypes, "experiments" of both true and quasi subtypes, etc.

Another contribution is the clarification and standardisation of names for different designs, which is necessary considering that typologies require a systematic language in order to classify their objects unambiguously. The final contribution consists in a detailed outline of designs, including their subtypes, specialised subtypes, and areas of application in built environment research and practice. Such an outline currently does not exist in the literature. Because the outline includes numerous references, it also serves as a catalogue to methodological sources in the built environment field.

4.2 RESEARCH DESIGN AND METHODS USED IN THIS CHAPTER

The research design constituted a literature review that was primarily typological, i.e., the literature was read with a view to identify applicable designs. The review pertained to methodological literature in the built environment field that discussed designs applicable to social research in the built environment. Two sets of methods were employed, namely a desktop literature search and an assembling of sources.

4.2.1 Desktop literature search

To review the literature systematically, it was necessary to distinguish between different types of methodological literature. This distinction helped to map the literature cognitively and to interpret it with an awareness of the different types of literature. I searched four types of literature, including:

- **Basic research textbooks** (i.e., textbooks and chapters in edited textbook compilations intended for basic or theoretical research within the context of academia, typically used by postgraduate students and researchers in built environment disciplines);
- **Applied research textbooks** (i.e., textbooks and chapters in edited textbook compilations intended for applied or practical research, typically used by practitioners in built environment disciplines);
- **Metamethodological journal articles** (i.e., nonempirical or metaresearch articles with a critical interest in a methodological theme (equivalent to World 3 research); and
- **Applied methodological journal articles** (i.e., empirical or research articles with a critical interest in the application of a specific design or method (equivalent to World 3 research), in addition to the empirical findings (equivalent to World 2 research).

The desktop literature search involved two separate searches for two different purposes. The first search was for methodology textbooks within the built environment field. The purpose of this search was to gather textbooks from which to compile the index of design subtypes. The logic of compiling the index from textbooks was because such books, for the sake of instruction, usually discuss a range of designs whereas other sources do not. The search criteria included all basic and applied research textbooks published since 1990 within the built environment field, including architecture, urban design, planning and interdisciplinary or cross-cutting fields such as housing studies, urban studies, design studies, etc., provided there was some focus on architectural, urban design or planning research.

I conducted the search using (1) the University of Pretoria library catalogue, (2) the internet and (3) bibliographies of textbooks. The search lasted over much of the duration of the study as I continuously discovered seemingly relevant texts. The search inevitably yielded a variety of texts. Instead of including all of them, which would have complicated the compilation of the index, all the texts were first meticulously reviewed, thought over, and critically evaluated against the abovementioned search criteria as to whether to include them or not. Consequently, a number of texts were excluded that were not relevant. Excluded texts tended to fall outside the fields of architecture, urban design and planning, or did not discuss applicable designs. These texts were nevertheless filed for purposes of referencing them elsewhere in the dissertation. Eventually, I singled out 11 texts from which to compile the index (see Table 24 on page 101).

The second search was for metamethodological and applied methodological journal articles. The purpose of this search was to provide a more detailed and thoroughly referenced outline of designs towards the end of this chapter (see Table 28). The search criteria for metamethodological articles included all such articles published between 1990 and 2005 within a list of journals that were used as a sample frame for the subsequent journal article survey (see Chapter 5). The list included 19 social research journals, indexed in *Scopus*, in the fields of architecture, urban design and planning. Articles were searched by means of *Scopus'* advanced search facility using a broad yet refined set of methodological keywords.

The search criteria for applied methodological articles included all articles surveyed as part of the subsequent journal article survey that discussed the application of a specific design or method in addition to empirical findings. The applied methodological articles included in this review therefore constituted a sub-sample within the journal article

survey. I therefore completed this part of the review only after completion of the journal article survey. The reason for not having searched applied methodological articles in the same way as metamethodological ones is that applied methodological articles were difficult to identify by means of keywords, since the methodological theme is usually not the only one in such articles. Moreover, because the journal article survey in Chapter 5 included a methodological content analysis, it was possible to identify applied methodological articles. Table 21 summarises the desktop literature search.

Table 21: Summary of desktop literature search

Criteria	Types of methodological literature			
	Basic research textbooks	**Applied research textbooks**	**Meta-methodological journal articles**	**Applied methodological journal articles**
Period	Since 1990	Since 1990	1990 – 2005	1996 – 2005
Source	Methodological literature in the built environment field	Methodological literature in the built environment field	Journals in the sample frame for the journal article survey	Sub-sample from the journal article survey
Total number of sources identified	**24**	**14**	**7**	**20**

4.2.2 Assembling of sources

I assembled sources from the desktop literature search by capturing some of their details in a spreadsheet, including:

- Author(s);
- Year of publication;
- Title;
- Journal (in the case of articles);
- Number of citations (in the case of articles)
- Field (i.e., architecture, urban design, planning, interdisciplinary);
- Type of source (as per Table 21, i.e., textbook, journal article, etc.); and
- Research design subtypes discussed therein.

Some of these details, including the year of publication, field, and type of source were coded numerically and exported to SPSS in order to review the literature quantitatively.

The spreadsheet served as a basis from which to identify and index applicable research design subtypes. Following the clustering of subtypes into prototypical designs, I reviewed all sources to outline designs in terms of their subtypes, specialised subtypes, and areas of application in built environment research and practice.

4.3 FINDINGS

Findings are presented in terms of a (1) review of methodological literature, (2) index of design subtypes, (3) clustering of design subtypes, and (4) outline of designs.

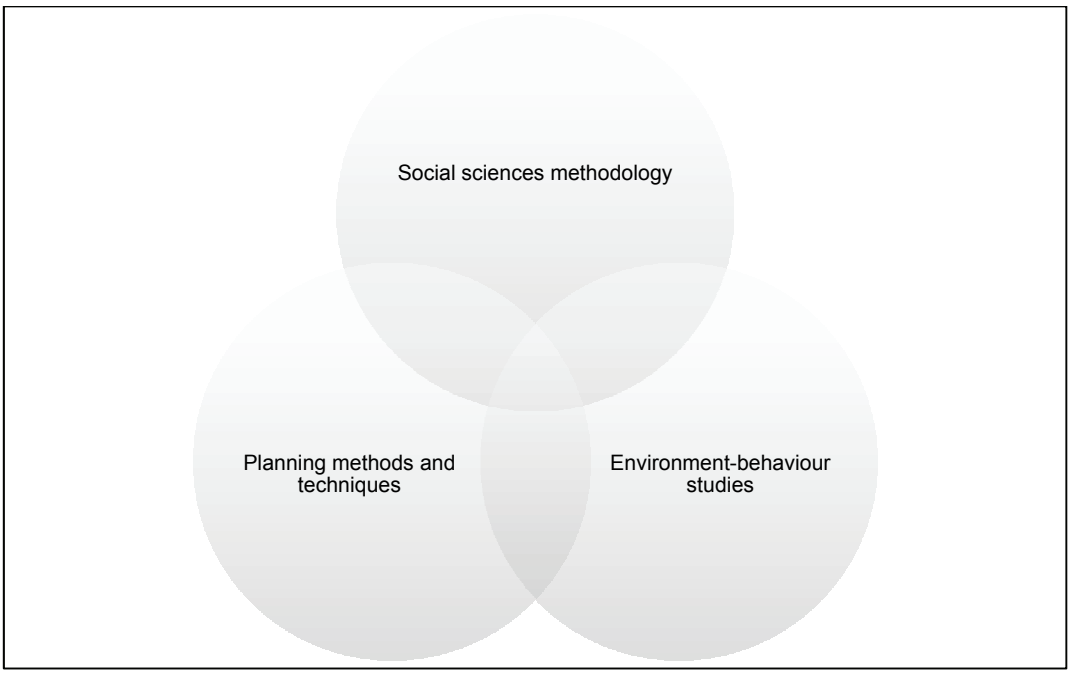
4.3.1 Review of methodological literature

The review consists of a mapping of the body of literature, followed by a brief quantitative and qualitative review, and a summary of the shortcomings of the literature.

4.3.1.1 Mapping the body of literature

The body of methodological literature in the built environment field can be mapped as consisting of roughly three distinct sub bodies, known as “social sciences methodology”, “environment-behaviour studies”, and “planning methods and techniques”. Diagram 4 maps the body of literature by means of a Venn diagram to illustrate the three distinct yet overlapping sub bodies of literature.

Diagram 4: Body of methodological literature in the built environment field



"Social sciences methodology" of course pertains to methodological literature in the social sciences. Due to the strong tradition of empirical research in the social sciences, social sciences methodology represents a rich body of methodological literature that overlaps with fields such as research ethics, philosophy and sociology of science, etc. It contains a number of sources applicable to this study, including sources that deal with research design and the dimensions of social research. Many such sources are referenced in Chapter 2.

"Environment-behaviour studies" is a subfield within the broader built environment field that studies the relationship between people and the environment – both natural and built. Because of its focus on the interaction between social and physical objects of study, the field to some extent developed its own methodological literature to deal with this kind of research. Yet, its literature has strong linkages with environmental psychology and sociology.

"Planning methods and techniques" is a subfield within planning that studies both the methods of *planning* as well as the methods of applied planning *research*. Baum (2005:121) makes a distinction between four kinds of planning methods, including, methods of (1) social interaction (for defining problems), (2) research and analysis (for identifying alternative responses), (3) decision-making (for deciding on a course of action) and (4) intervention (for implementing decisions). Methods of social interaction, decision-making and intervention pertain to methods of planning, whereas methods of research and analysis pertain to methods of applied planning research. That part of "planning methods and techniques" that deals with methods of research and analysis has strong linkages with social sciences methodology and environment-behaviour studies. In fact, many of the methods typically presented in "planning methods and techniques" courses are borrowed from social sciences methodology and environment-behaviour studies (e.g., see Dandekar, 2003 (ed.); Gaber & Gaber, 2007; Wang & Vom Hofe, 2007; LaGro, 2008). The following section provides a quantitative review of the literature.

4.3.1.2 Quantitative review

This review provides an idea of the extent or volume of methodological literature in the built environment field that discusses designs applicable to social research in the built environment. Table 22 and Table 23 show the counts and percentages of different types of methodological literature by field (i.e., architecture vs. urban design vs. planning vs. interdisciplinary) and period (i.e., 1990 – 1999 vs. 2000 – 2008).

Table 22: Types of methodological literature by field

Types of methodological literature	Field									
	Architecture		Urban design		Planning		Interdisciplinary		Combined	
	Count	%	Count	%	Count	%	Count	%	Count	%
Basic research textbooks	2	28.6	0	0.0	0	0.0	22	88.0	24	36.9
Applied research textbooks	0	0.0	0	0.0	11	42.3	3	12.0	14	21.5
Metamethodological journal articles	0	0.0	1	14.3	6	23.1	0	0.0	7	10.8
Applied methodological journal articles	5	71.4	6	85.7	9	34.6	0	0.0	20	30.8
Total	**7**	**100.0**	**7**	**100.0**	**26**	**100.0**	**25**	**100.0**	**65**	**100.0**

Table 23: Types of methodological literature by period

Types of methodological literature	Period					
	1990-1999		2000-2008		Combined	
	Count	%	Count	%	Count	%
Basic research textbooks	0	0.0	24	48.0	24	36.9
Applied research textbooks	6	40.0	8	16.0	14	21.5
Metamethodological journal articles	3	20.0	4	8.0	7	10.8
Applied methodological journal articles	6	40.0	14	28.0	20	30.8
Total	**15**	**100.0**	**50**	**100.0**	**65**	**100.0**

Table 22 and Table 23 show that the volume of methodological literature in the built environment field that discusses designs applicable to social research in the built environment is not much – a mere 65 sources (including individually authored chapters of edited book compilations). Basic research textbooks constituted the bulk of literature (about 37%), followed by applied methodological journal articles (about 31%), applied research textbooks (about 22%) and metamethodological journal articles (about 11%).

Basic research textbooks constituted the bulk because individually authored chapters of book compilations were counted separately. In fact, only three basic research textbooks were sourced, namely Groat and Wang's *Architectural research methods* (2002), Vestbro *et al.*'s (eds.) *Methodologies in housing research* (2005) and Knight and Ruddock's (eds.) *Advanced research methods in the built environment* (2008). Apart from Groat and Wang' text, which is meant for architecture, urban design and planning still lack their own basic research textbooks, considering that the texts by Vestbro *et al*. and Knight and Ruddock are meant for housing studies, architecture and construction management.

Most of the applied research textbooks, however, are meant for planning. Examples include Shefer and Voogd's (eds.) *Evaluation methods for urban and regional plans* (1990), Dandekar's (ed.) *The planner's use of information* (2003), Gaber and Gaber's *Qualitative analysis for planning and policy* (2007), Wang and Vom Hofe's *Research methods in urban and regional planning* (2007), and LaGro's *Site analysis* (2008). Other applied research texts are meant for visual research, such as Sanoff's *Visual research methods in design* (1991), urban research, such as Andranovich and Riposa's *Doing urban research* (1993), and architecture, such as Zeisel's *Inquiry by design* (2006). Again, urban design lacks its own applied research textbook.

Metamethodological journal articles, which are arguably a more sophisticated type of literature, constituted the smallest proportion (i.e., seven articles in total). The three most important ones in terms of citations included Richardson and Jensen's *Linking discourse and space: Towards a cultural sociology of space in analysing spatial policy discourses* (2003) (cited 20 times), Greed's *The place of ethnography in planning: or is it 'real research'?* (1994) (cited 10 times), and Khakee's *Evaluation and planning: Inseparable concepts* (1998) (cited seven times). The emphasis in these articles is therefore on designs such as discourse analysis, ethnography and evaluation research.

Applied methodological journal articles seemed to be an important outlet for methodological discussion, since this type constituted the second largest proportion (i.e.,

20 articles in total). The most important article in terms of citations included Flyvbjerg's *Bringing power to planning research: One researcher's praxis story* (2002) (cited 29 times). This article discussed participatory action research as applied to planning practice, although the article is probably cited more for epistemological reasons than methodological ones due its important insights into the role of power in planning research and knowledge. The second and third most important articles included Talen's *After the plans: Methods to evaluate the implementation success of plans* (1996) (cited 21 times), and Gaber and Gaber's *Utilizing mixed-method research designs in planning: The case of 14th Street, New York City* (1997) (cited 11 times). These discuss evaluation and ethnographic designs respectively.

Finally, the total number of sources increased from 15 between 1990 and 1999 to 50 between 2000 and 2008 (see Table 23). Thus, there appears to have been an increase in interest in methodology and research design in the built environment field. Interestingly, while there were no basic research textbooks between 1990 and 1999, this type of literature increased to such an extent that it constituted the bulk of publications between 2000 and 2008. Numbers of applied research textbooks and metamethodological journal articles increased slightly, while the number of applied methodological journal articles more than doubled. The following section provides a qualitative review of the literature.

4.3.1.3 Qualitative review

I briefly review two of the sub-bodies of methodological literature in the built environment field, namely "environment-behaviour studies" and "planning methods and techniques". A review of "social sciences methodology" would have been beyond the scope of this chapter. Besides, Chapter 2 reviewed prominent texts from that field.

According to Moudon, built environment disciplines turned to environmental psychology and sociology as early as the 1960s as valuable sources of information for the planning and design of built environments, but also to better understand the relationship between people and environments (2003:371). Since then, environment-behaviour studies have constituted a *bona fide* part of architectural and urban design research.

Scholars such as Amos Rapoport, Robert Bechtel and Robert Marans have been prominent, publishing a number of methodological textbooks and articles in the field. (e.g., see Bechtel *et al*., 1987; Rapoport, 1999). However, since Bechtel *et al*.'s *Methods in environmental and behavioural research* (1987), the field do not seem to have acquired another text. Rapoport provides a summary of his methodological work in a more recent

article entitled *A framework for studying vernacular design* (1999). In addition, the field has a few dedicated journals, including *Environment & Behavior*, *Journal of Environmental Psychology*.

By the early 1980s, Lawrence provided a critical review of eight methodology textbooks in the field of environment-behaviour studies in relation to architectural research. He criticised the mainly reductionist methods in these texts and argued for phenomenological ones (1983:82). Moudon provided a more recent review of the field and found that criticism of positivism in early environment-behaviour studies had indeed led to more interpretative research in later years (2003:371-373). Nevertheless, the early positivist or "science-based" foundations of the field are seen as having made subjective or intuitive planning and design processes more rational (Moudon, 2003:371-372). Despite its theoretical and methodological contributions to the built environment field, environment-behaviour studies nowadays appear to be limited to small-scale empirical studies, while some are of the opinion that its methodological contributions have just resulted in "decades of sterility" in architectural research (Leon van Schaik, personal discussion, 10 August 2007).

"Planning methods and techniques" constitutes a subfield within planning. I indicated earlier that this field pertains to both methods of *planning* and methods of applied planning *research*. Special editions on planning methods have appeared in the *Journal of Planning Education and Research* (1986) and *Journal of Architectural and Planning Research* (2005). Apart from these special editions, Dandekar (2003), Gaber and Gaber (2007), Wang and Vom Hofe (2007) and LaGro (2008) have recently produced texts specifically for applied planning research. In addition to these, Dandekar (1986; 2005) and Gaber (1993) made a number of normative arguments in journal articles in favour of qualitative methods in planning research and practice. Khakee (1998) pointed to a correspondence between shifts in planning theory and shifts in evaluation research from first to fourth generation evaluations. Flyvbjerg (2001; 2002) made strong arguments for what he terms "phronetic planning research" – a form of critical social science and participatory action research as applied to planning practices.

Because "environment-behaviour studies" focuses mainly on man-environment interactions as an object of study, and because "planning methods and techniques" focuses mainly on how to do planning and applied planning research in particular, both these fields lack sources that discuss a comprehensive range of designs applicable to social research in the built environment. However, this is not necessarily a criticism of

existing sources. Such sources tend to specialise in the application of specific designs or methods in particular contexts. It is perhaps more an identification of a gap in the literature. Thus, it was necessary to synthesise existing sources to identify a comprehensive range of designs applicable to social research in the built environment. The more critical shortcomings of the literature are subsequently summarised.

4.3.1.4 Shortcomings of the literature

The shortcomings of methodological literature in the built environment field are as follows:

- The distribution of the literature between the fields of architecture, urban design and planning is fairly unequal, with the bulk of sources pertaining to planning;
- The literature tends toward conceptual ambiguity or an inconsistent usage of certain methodological terms (of which examples are provided later in this chapter);
- Judging by the number of sources that do not discuss research design (which had to be excluded from this review), and the number of sources that do not identify prototypical designs, neither the notion of “research design”, nor what constitutes prototypical designs, appear to be clearly established in the literature;
- Consequently, the literature lacks sources that discuss a comprehensive range of prototypical designs applicable to social research in the built environment;
- Apart from normative arguments for qualitative designs and discourse analysis in particular, the literature lacks a coherent methodological debate; and
- The literature offers little or even no direction for further methodological studies in the built environment field.

Despite these shortcomings, relevant sources were nevertheless synthesised to identify applicable designs. This identification took place by means of an index of design subtypes.

4.3.2 Index of design subtypes

The literature review revealed a noticeable lack of sources that discuss a comprehensive range of prototypical designs applicable to social research in the built environment. However, given this review, and the systematic assembling of sources and identification of design subtypes discussed within those sources, it is now possible to compile an index of design subtypes. The following section presents the index and discuses some of the subtypes included in the index, as well as issues around their appropriate names, while the section thereafter discuses “designs” excluded from the index.

4.3.2.1 Included designs

I compiled the index using the 11 textbooks from the desktop literature search. As mentioned earlier, the logic of compiling the index from textbooks was because such books, for the sake of instruction, usually discuss a range of designs whereas other sources do not. Other sources, such as journal articles, usually discuss the theory or application of one particular design or type of designs due to their shorter page length and focused content. Table 24 lists the 11 texts, including their authors, years of publication, titles, fields, and research contexts (i.e., basic vs. applied) in order of year of publication.

Table 24: List of textbooks used to compile the index

Authors	Year of publication	Title	Field	Research context
Shefer & Voogd (eds.)	1990	Evaluation methods for urban and regional plans	Planning	Applied
Sanoff	1991	Visual research methods in design	Interdisciplinary: Design	Applied
Andranovich & Riposa	1993	Doing urban research	Interdisciplinary: Urban studies	Applied
Groat & Wang	2002	Architectural research methods	Architecture	Basic (and applied)
Dandekar (ed.)	2003	The planner's use of information	Planning	Applied
Vestbro *et al*. (eds.)	2005	Methodologies in housing research	Interdisciplinary: Housing	Basic (and applied)
Zeisel	2006	Inquiry by design: Environment/behavior/neuroscience in architecture, interiors, landscape, and planning	Interdisciplinary: Design	Applied
Gaber & Gaber	2007	Qualitative analysis for planning and policy	Planning	Applied
Wang & Vom Hofe	2007	Research methods in urban and regional planning	Planning	Applied
Knight & Ruddock (eds.)	2008	Advanced research methods in the built environment	Interdisciplinary: Built environment	Basic
LaGro	2008	Site analysis: A contextual approach to sustainable land planning and site design	Planning	Applied

Considering the definition of “research design” in Chapter 1, I used two criteria to determine whether to include a prospective subtype or not. Firstly, a prospective subtype had to constitute a logical plan for research, or “compact formula” as Fouché and De Vos called it (2005b:132-133), and secondly, it had to constitute more than just a method for data collection, analysis or interpretation. For example, a cross-sectional survey constitutes a logical plan for research to generalise findings from a sample to a population. Therefore, “cross-sectional surveys” evidently constitutes a design subtype. Within the survey, a researcher then uses various methods such as sampling, self-administered questionnaires, inferential statistics, etc. Interviews, for example, which are often discussed in texts, do not constitute a logical plan for research, but merely a method of data collection that can be used in various other designs, including surveys, field studies, case studies, etc.

Table 25 presents the index of design subtypes. The titles of the 11 texts used to compile the index are included in the columns from left to right in order of their year of publication. The columns show whether different texts discussed different subtypes as a research “design”, “method”, or “type”, or whether texts discussed an “example” of a study in which subtypes were applied. If a text discussed a subtype and specifically called it a “design”, I identified the subtype as being discussed as a design and highlighted it in the index to make it stand out since we are interested in identifying *designs*.

If a text discussed a subtype, but did not specifically call it a design, I identified the subtype as being discussed as a method. However, this does not necessarily mean that such a text regarded the subtype as a method. I simply found such a discussion to focus on the methods associated with the subtype rather than its design aspect. As Hakim (1987:2) pointed out, textbooks tend to focus on methods rather than design. Furthermore, if a text discussed a subtype as a type of research in which different designs and methods can be used, I identified the subtype as being discussed as a type of research. A few texts discussed examples of studies in which researchers applied a specific subtype, in which case I indicated such discussions as an example of research.

Table 25: Index of design subtypes (Continued on next page)

#	Design subtypes	Shefer & Voogd (1990)	Sanoff (1991)	Andranovich & Riposa (1993)	Groat & Wang (2002)	Dandekar (ed.) (2003)	Vestbro *et al.* (eds.) (2005)	Zeisel (2006)	Gaber & Gaber (2007)	Wang & Vom Hofe (2007)	Knight & Ruddock (eds.) (2008)	LaGro (2008)
1	Cross-sectional surveys			Method		Design		Design				Method
2	Longitudinal surveys					Design	Example					
3	True experiments (aka laboratory experiments)			Design	Design			Design				
4	Quasi-experiments (aka field/natural experiments)			Design	Design			Design				
5	Modelling; Simulation		Method		Design	Method	Example			Method	Method	
6	Mapping; Visualisation		Method				Example				Method	Method
7	Content/textual analysis								Method			
8	Discourse/conversational analysis											
9	Historiography; Biography				Design						Method	
10	Ethnography (aka participant observation)		Method	Method	Design	Method	Method		Method			Method
11	Phenomenology				Design		Method					
12	Single/multiple case studies				Design		Method	Design			Design	
13	Comparative case studies						Method					

Table 25: Index of design subtypes (Continued from previous page)

#	Design subtypes	Shefer & Voogd (1990)	Sanoff (1991)	Andranovich & Riposa (1993)	Groat & Wang (2002)	Dandekar (ed.) (2003)	Vestbro *et al.* (eds.) (2005)	Zeisel (2006)	Gaber & Gaber (2007)	Wang & Vom Hofe (2007)	Knight & Ruddock (eds.) (2008)	LaGro (2008)
14	Site/settlement analysis and assessment							Type		Type		Type
15	Plan/policy analysis and assessment							Type	Type	Type		
16	Diagnostic/clarificatory evaluation (aka *ex ante* eval.)						Example			Type		Type
17	Implementation evaluation; Programme monitoring	Example								Type		
18	Outcome/impact evaluation (aka *ex post* evaluation)	Method; Example					Example	Type		Type		
19	Technical/scientific/collaborative PAR				Type							
20	Practical/mutual and/or collaborative/deliberate PAR		Type		Type	Method			Method			
21	Emancipating/enhancing/critical science PAR						Method; Example				Method	
22	Literature reviews; Research synthesis								Method			
23	Conceptual analysis											
24	Typology/model/theory construction											
25	Philosophical/logical/normative argumentation				Design							

Note: "PAR" is a standard acronym for "participatory action research".

The index includes no less than 25 design subtypes applicable to social research in the built environment. However, a cursory overview of Table 25 suggests that most of these subtypes are discussed as methods or types of research, more so than as designs. Only five of the 11 texts discuss and specifically refer to some of the subtypes as designs, even though all of them meet the criteria for a design. The only texts that expound the notion of "research design" and include chapters or sections on different designs are those of Andranovich and Riposa, Groat and Wang, and Zeisel. Although other texts discuss aspects of design, these discussions are, however, tangential to the notion of "research design". The notion of "research design" is therefore not well established in methodology textbooks in the built environment field.

Table 25 also shows that only 10 of the 25 subtypes are discussed as designs in at least one of the texts. Only four subtypes, including "cross-sectional surveys", "true experiments", "quasi-experiments" and "single/multiple case studies", are discussed as designs in more than one text. It therefore seems as if surveys, experiments and case studies are, more than any other design, regarded as applicable to social research in the built environment. Interestingly, subtypes 14 – 20, i.e., all those ranging from "site/settlement analysis and assessment" to "practical/mutual and/or collaborative/deliberate PAR", are the only ones that appear to be discussed as research types more so than as designs or methods.

Three of the 25 subtypes are not discussed at all in any of the texts. Yet, they were nevertheless included in the index. These include "discourse/conversational analysis", "conceptual analysis", and "typology/model/theory construction". "Discourse/conversational analysis" has received considerable attention in journal articles in the fields of planning and policy (e.g., see Richardson & Jensen, 2003; Lees, 2004; Jacobs, 2006), as well as housing studies (e.g., see Jacobs & Manzi, 1996 & 2000; Hastings, 2000; Marston, 2002; Darcy & Manzi, 2003).

Notions of planning as a socially constructed and political undertaking, which can be significantly influenced by the manner in which language is used, have in the last few decades drawn attention to discourse analysis to understand how issues of power and political agendas are mediated through planning documents such as policies, plans, guidelines, etc. With increasing emphasis on participatory planning and issues of sustainability, equity, redress, upliftment, marginalisation, etc., discourse analysis is likely to receive even more attention as a design for research on procedural issues in planning and other built environment disciplines. In fact, Richardson and Jensen's article, *Linking*

discourse and space: Towards a cultural sociology of space in analysing spatial policy discourses (2003), was shown to be the most cited article in the sample of metamethodological journal articles. The inclusion of discourse analysis is therefore important, especially for planning research. The reason for its absence in textbooks may be that all of the texts for planning research focus on applied research, while discourse analysis is arguably associated more with basic or theoretical research.

"Conceptual analysis" and "typology/model/theory construction" constitute nonempirical or metaresearch, whereas textbooks tend to focus more on designs and methods for empirical research. However, Groat and Wang discuss "logical argumentation", also a nonempirical subtype, as a design applicable to architectural research (2002:301-340), while Gaber and Gaber discuss different forms of desktop and meta-analyses, or what may be termed "research synthesis", also a nonempirical subtype, as a design applicable to urban policy research (2007:103-134). Forsyth and Crewe (2006), and Goldstein and Carmin (2006) use the term "synthesis" to refer to a particular category of studies within their own surveys of journal articles in planning. While Goldstein and Carmin describe articles that use a "synthesis" design as intellectual contributions that "reviews, makes sense of, or assesses a literature on a particular problem or issue" (2006:71), Forsyth and Crewe describe such articles as "works of synthesis" because:

> They summarize, analyze, and classify various research findings in a new way to develop a new conceptualization. This involves pulling together a major argument from a range of existing work, where the new synthesis is more than the sum of its parts. While logical argumentation can also develop a new conceptualization, it does this through a form of reasoning, rather than sifting and classifying earlier research. It is a matter of emphasis.
>
> (2006:167)

With the inclusion of "research synthesis" and "logical argumentation" as two nonempirical subtypes among a whole range of empirical subtypes, it seemed necessary to include a fuller range of nonempirical subtypes to ensure exhaustiveness. For this purpose, methodology textbooks other than those in the built environment field had to be consulted. Although textbooks in the social sciences – including the more prominent ones – are just as limited in their identification of nonempirical designs, Mouton (2001:176-178) nevertheless discusses "theory-building or model-building studies", or what I term "typology/model/theory construction", as another nonempirical subtype, while Mouton (2001:175-176) and Du Toit (2005:424-437) discuss "conceptual analysis" as yet another nonempirical subtype. Since metaresearch usually deals with nonempirical objects that

are relevant to any field of study, including objects such as literature, concepts, typologies, models, theories, arguments, etc., it follows that metaresearch, or nonempirical research, is equally applicable to the built environment field, hence the inclusion of additional nonempirical subtypes in the index.

The index also presents standardised terms for design subtypes. The literature sometimes uses different terms for subtypes, or it uses terms inconsistently, which probably leads to more confusion than clarity. Yet, the proliferation of terms seems to be the result of authors' personal styles and preferences.

As a rule, terms used for subtypes are those used by the majority of authors who discuss them. In some cases, terms were standardised. For example, "longitudinal surveys" are sometimes called panel, cohort or tracer studies. Yet, the term "longitudinal" is an antonym for "cross-sectional", as in "cross-sectional surveys". Besides, panel, cohort and tracer studies actually constitute specialised subtypes of longitudinal surveys (see Table 28 later in this chapter). Where subtypes have two possible names, I provide the lesser-known term in brackets following the acronym "aka" (also known as). For example, "true experiments" are also known as "laboratory experiments", while "quasi-experiments" are also known as "field/natural experiments". Thus, the terms "true experiments" and "quasi-experiments" are found more often in the literature.

In addition, "ethnography" is also known as "participant observation". Yet, because of the term "observation", it is easy to mistake "participant observation" for a method rather than a design and to compare it with methods such as nonparticipant observation or unobtrusive measures. Thus, the index helps to clarify that participant observation is in fact a design synonymous to ethnography. Finally, "diagnostic/clarificatory evaluation" is also known as "*ex ante* evaluation" in the planning field, while "outcome/impact evaluation" is also known as "*ex post* evaluation" (Khakee, 1998:359-360; Voogd, 1998:113). "Participatory action research" also goes by the now standard acronym of "PAR" (e.g., see Strydom, 2005:408), and is henceforth used in this dissertation.

Some terms are newly coined. For example, "mapping" and "visualisation" were coined to refer to a type of design in which the purpose is to illustrate objects, which is particularly applicable to built environment research. "Mapping" is applicable to research that illustrates objects in space such as research using geographic information systems (GIS). "Visualisation" is applicable to research that illustrates relationships or connections between components of objects, such as in "social network analysis" (SNA) and "socio-

spatial analysis", also known as "space syntax". In SNA, the purpose is to illustrate social networks through organisational relationships as systems of nodes or actors linked by precisely classified connections, while data are typically analysed mathematically and presented graphically (Werner, 2005; Pryke, 2008:171-172). In socio-spatial analysis, the purpose is to illustrate the adjacency and permeability of spaces and their effects on social interactions (Hillier & Hanson, 1984; Khattab, 2005; Penn, 2008). "Visual research methods", a termed coined in the literature to refer to methods dealing with visual data (e.g., see Sanoff, 1991; Banks, 2001; Rose, 2001), can typically be employed as part of "mapping" and "visualisation".

"Site analysis", a well-known term in any built environment discipline, was expanded to "site/settlement analysis and assessment", since many studies analyse *and* assess not only sites, but sometimes settlements as well. Similarly, "policy analysis" was expanded to "plan/policy analysis and assessment" to capture the notion that plans or designs are, like policies, equally subject to analysis and assessment.

The delineation of different subtypes of evaluation research was more difficult. Authors such as Babbie (2007:348-373), Babbie and Mouton (2001:333-372), Bless and Higson-Smith (2004:45-61), De Vos (2005c:367-391) and Robson (2002:202-215), differ in their conceptions of evaluation research and their delineation of different subtypes. Based on a synthesis of these authors' conceptions and delineations, three distinct subtypes of evaluation research are included in the index, namely "diagnostic/clarificatory evaluation", "implementation evaluation; programme monitoring" and "outcome/impact evaluation". This delineation captures the main subtypes of evaluation research.

Although most texts that discuss PAR do not distinguish between different subtypes thereof, Berg (2007:230-233) makes a useful distinction between three subtypes, as included in the index. Combining the terms used by Grundy (1988:353), Holter and Schwartz-Barcott (1993:301) and McKernan (1991:16-17) (as cited by Berg, 1997:230), Berg came up with the terms "technical/scientific/collaborative PAR", "practical/mutual and/or collaborative/deliberate PAR" and "emancipating/enhancing/critical-science PAR". Berg uses two criteria to distinguish these three subtypes, namely (1) the relationship between researcher and practitioner, and (2) the flow of communication. In "technical/scientific/collaborative PAR", the researcher serves as a collaborator and facilitator to the practitioner, while the practitioner brings information from the researcher to clients. The flow of communication is primarily in the form of the practitioner conveying the researcher's ideas and information to clients (Berg, 2007:231). In "practical/mutual

and/or collaborative/deliberate PAR", the researcher and practitioner collaborate to identify possible problems, issues, underlying causes, interventions, etc.

> The research problem is defined only after the researcher and practitioner have assessed the situation and reach a mutual understanding. This sort of "practical action research", as Grundy (1988, p. 357) describes it, seeks to improve practice-and-service delivery of the practitioner through application of the "practical wisdom of the participants". The communication flow in this [type] of action research starts with the researcher and facilitator working collaboratively and then flows from the practitioner (facilitator) to the group of stakeholders. This design of action research creates a more flexible approach than the *technical/scientific/collaborative* [design] in that it embraces a greater concern for empowering and emancipating stakeholders working with the practitioner.
>
> (Berg, 2007:231)

"Emancipating/enhancing/critical science PAR" is quite different from the first two subtypes as it "promotes emancipatory praxis in the participating practitioners; that is, it promotes a critical consciousness which exhibits itself in political as well as practical action to promote change" (Grundy, 1987:154 as cited by Berg, 2007:232). This subtype is basically defined by two goals, namely to (1) establish a much closer link between theory and practice, and (2) raise the collective consciousness of practitioners so that they can dispel clouded understandings and better understand fundamental problems.

> This is accomplished by developing a social critique, wherein the consideration of theory and practice comes together. Development of this sort of social criticism has three parts: theory, enlightenment, and action (see Gundy, 1988). The generation of action-oriented policy, then, may be seen as following from this mode of action research and this tri-part notion of theory, enlightenment, and action. It is actually the coming together of theory and enlightenment that provides the emancipation and empowerment to the participants, which then leads to action and change.
>
> (Berg, 2007:232)

This concludes the discussion of PAR subtypes. The discussion here was not meant to be about PAR *per se*, but rather to clarify the terms used to denote its different subtypes.

Finally, certain designs that are typical of built environment research are sufficiently similar to some of the subtypes in the index, so that they can be seen as specialised designs within those subtypes. I already indicated that Hillier and Hanson's "space syntax", or "socio-spatial analysis" can be used as a specialised "visualisation" design.

"Space syntax" or "socio-spatial analysis" will therefore not constitute a standalone design, but a specialised design under "visualisation". Also, Lynch's "cognitive mapping" (1960), although it sounds like it could be a specialised "mapping" design, is actually a phenomenological field study since the purpose of cognitive mapping is to interpret how people make sense of their environments in a phenomenological way. The technique of getting people to draw maps of their environments is simply a unique method of data collection, and does not determine the design of a study. Flyvbjerg's "phronetic planning research" (2002) (see also Flyvbjerg, 2001), with its conception of planning as socially constructed and imbued with issues of power, is ontologically and methodologically similar to PAR, since the purpose of "phronetic planning research" is to participate in and act on planning practices – a point with which Flyvbjerg himself has agreed (personal discussion, 18 July 2007).

Having provided reasons for the inclusion of certain designs, and how they ought to be named, reasons are now provided for the exclusion of various other "designs" form the index.

4.3.2.2 Excluded "designs"

This section provides reasons for the exclusion of what others sometimes deem to be research designs. However, these "designs" might well qualify as designs depending on one's definition and criteria for "research design". Therefore, I do not suggest that others' conceptions of what qualifies as designs are necessarily wrong, just that these "designs" would not qualify as designs in terms of the criteria put forward in this study.

To recapitulate the criteria for a research design; firstly, it has to constitute a logical plan for research, and secondly, it has to constitute more than just a method for data collection, analysis or interpretation. Yet, if prospective designs were excluded because they did not meet these criteria, then what do they constitute if not designs? Some "designs" were excluded because they were considered to be (1) research *strategies*, (2) research *types*, (3) research *methods*, (4) *specialised* subtypes, or (5) *areas of application*. Excluded "designs" appear in bold below in places where they are discussed.

"Designs" that were rather considered to be strategies include Hofstee's "interdisciplinary research" (2006:130) and Mouton's "methodological studies" (2001:173-175). Hofstee describes **"interdisciplinary research"** as research that borrows methods, concepts, or ideas from one discipline while applying them to a problem in another discipline (2006:130). Yet, this interdisciplinary borrowing, which seems to be the main

characteristic of this "design", is for strategic purposes to strengthen or improve the research rather than to plan the research.

Mouton describes **"methodological studies"** as "studies aimed at developing new methods of data collection and sometimes validating a newly developed instrument through a pilot study" (2001:173). Yet, the development of new methods can also be seen as strategic since it aims to strengthen or improve research. Although it is possible to design a study around developing or validating methods, it is more likely that the design of such a study will conform to an existing design such as a survey or experiment. For example, to develop and validate instruments, such as questionnaires, a survey or experimental design is likely to be used. Likewise, the design of this study, which can be seen as a methodological study, conforms to "typology construction", which is subtype number 24 in Table 25.

The notion of "methodological studies" can also be covered by the notion of "applied methodological studies", in which research questions that specifically deal with methodological issues are formulated in addition to theoretical or practical questions. In such studies, epistemic or pragmatic interests are balanced against critical interests in methodological issues. In fact, the literature review revealed that applied methodological journal articles formed a much larger proportion of the methodological literature compared to metamethodological articles – about 30% as opposed to 10% (see Table 22 or Table 23).

Quite a few "designs" are actually collections of designs associated with a particular methodological consideration, such as a research purpose, paradigm, approach, etc. These "designs" are rather considered research types – their type being characteristic of the particular methodological consideration with which they are associated. Thus, there can be different types of research in terms of different methodological considerations. For example, if we take "research purposes" as a methodological consideration (as discussed under the teleological dimension of social research in Chapter 2), and we single out the purpose of "description", then studies with various designs for descriptive purposes would constitute a *type* of research. Hence, the literature refers to "descriptive", "explanatory" or "exploratory" types of studies, etc.

Hedrick *et al*. (1993:44-51), Andranovich and Riposa (1993:60-61) and Bless and Higson-Smith (2004:67-70) refer to **"descriptive research designs"**, also known as **"pre-experimental designs"**, in addition to other experimental designs. Hedrick *et al*. state

that the purpose of descriptive designs is to "provide a picture of a phenomenon as it naturally occurs, as opposed to studying the impacts of the phenomenon or intervention", while the single case study is often referred to as a typical example of a descriptive design (1993:44). Yet, from Hedrick *et al*.'s definition, it is clear that "descriptive research designs" is actually about a particular research purpose rather than a logical plan for research. Known designs that are associated with descriptive purposes, such as surveys, field studies and case studies, can just as well be used to design studies with descriptive purposes. "Descriptive research" will therefore not constitute a design, but a type of research in which known designs that are associated with descriptive purposes can be used.

Hofstee coins a design called **"critical theories"** and describes it as follows:

> Critical theory studies take, as the name indicates, a profoundly critical perspective on society, and seek to move past superficial descriptions of 'consensual reality' to the structures underlying it. Critical theory is explicitly political. It questions the assumptions that form the basis of our understanding of reality. Power, whose interests are served, and hidden assumptions are central to critical theory studies.
>
> (2006:125)

From Hofstee's description, it is clear that he is actually discussing one of the methodological paradigms outlined in Chapter 2, namely critical social science, also known as critical theory, and not a design that constitutes a logical plan for research. Like "descriptive research", "critical theories" will also not constitute a design, but a type of research in which designs that are associated with critical social science, such as PAR, can be used.

Creswell (2009:3-4) classifies designs as **"qualitative"**, **"quantitative"** and **"mixed-methods"**, while Babbie and Mouton (2001:269-312) and Groat and Wang (2003:173-202) identify **"qualitative studies"** as a design next to designs like surveys, case studies, etc. Although these authors do not appear to consider the terms "qualitative", "quantitative" and "mixed-methods" as designs in themselves, but as collections of designs, it should be noted that these terms actually refer to different methodological approaches (see Chapter 2). Like "descriptive research", and "critical theories", the terms "qualitative", "quantitative", and "mixed-methods" will also not constitute designs, but types of research in which designs that are associated with either one of them can be used.

Besides, this study takes a stance against an unequivocal classification of designs as "qualitative", "quantitative" or "mixed-method" without considering other criteria. Although different designs *tend* to be associated with different approaches, it is nowadays common practice for researchers to be pragmatic about methods and to use both qualitative and quantitative methods within a single design. Verily, De Vos sees the pragmatic paradigm as a sign of the end of the so-called "paradigm wars" between quantitative and qualitative camps (2005b:359-360).

De Vaus (2001:113-218) and Bryman and Teevan (2005:35-42) classify designs as **"longitudinal"** and **"cross-sectional"** in addition to experiments and case studies. Like "qualitative", "quantitative" and "mixed-method" designs, "longitudinal" and "cross-sectional" will also not constitute designs, but types of research in which designs that are associated with either one of them can be used, such as "cross-sectional surveys" and "longitudinal surveys" (see Table 25).

"Designs" that are rather considered research methods, include "observation studies" (as seen in Leedy & Ormrod, 2010:182-183), and "correlational research" (as seen in Groat & Wang, 2002:16; and Leedy & Ormrod, 2010:183-185), also known as "correlation-based research" (as seen in Hofstee, 2006:123). In **"observation studies"**:

> . . . the focus is typically on a certain aspect of behavior. Furthermore, the behavior is quantified in some way. In some situations, each occurrence of the behavior is *counted* to determine its overall frequency. In other situations, the behavior is *rated* for accuracy, intensity, maturity, or some other dimension.
>
> (Leedy & Ormrod, 2010:182-183)

In **"correlational research"**, Groat and Wang describe the "signature characteristic of this research design . . . [as] the discovery of patterns or relationships among specified variables of interest in a particular setting or circumstance" (2002:16). However, these two "designs" are rather considered research methods, since they are primarily about observation, quantification and correlation of data, especially quantitative data. For example, correlational research, rather than constituting a logical plan for research, simply comes down to data analysis, in particular the application of statistical methods such as correlation coefficients within known designs such as surveys and experiments. "Correlation" is therefore a method of data analysis within known designs such as surveys and experiments.

Another "design" that is rather considered a research method is **"secondary data analysis"** (as seen in Mouton, 2001:164-165; and Hofstee, 2001:128-129). In secondary data analysis, secondary or existing data, mostly quantitative, are reanalysed in order to test hypotheses or validate models (Mouton, 2001:164). Secondary data analysis, therefore, is tantamount to data analysis, even though it involves a particular analysis of a particular type of data, i.e., a reanalysis of secondary data. Secondary data analysis is therefore a method of data analysis within designs associated with quantitative approaches and secondary sources of data, such as modelling and simulation, and even designs such as intervention and evaluation research.

Certain "designs" are rather considered specialisations located under subtypes already included in the index. For example, Leedy and Ormrod describe **"meta-analysis"** as an analysis of analyses, whereby a researcher analyses and draws conclusions about other researchers' statistical analyses (2010:282). The steps in a meta-analysis typically include (1) conducting an extensive search for relevant studies, (2) identifying appropriate studies to include in the meta-analysis, and (3) converting each study's results into a common statistical index (Leedy & Ormrod, 2010:283). It is exactly this synthesis and meta-analysis of the results of other studies that locates "meta-analysis" as a specialised subtype under "research synthesis" (see Table 28 later in this chapter). Similarly, **"grounded theory"**, regarded by some as a qualitative design (e.g., see Robson, 2002:90; Fouché, 2005:270-271; Leedy & Ormrod, 2010:142-144; Creswell, 2009:13), is located as a specialised subtype under "theory construction" (see Table 28), since "grounded theory" is about constructing theory from data, especially qualitative data, hence the notion of theory being grounded in data.

A "design" that is rather considered an area of application for other designs is **"comparative analysis"** (Hofstee, 2006:124-125), also known as **"cross-cultural/national research"** (Mouton, 2001:154-155). In a "comparative analysis":

> . . . the research investigates, in a focused and systematic manner, two items (sometimes three . . .) in depth and compares them to each other to find the reasons for difference or similarity. Comparative analysis can compare small individual cases, or range across national borders and time.
>
> (Hofstee, 2006:124)

From Hofstee's description, it is clear that comparative analysis is actually about comparing different objects of study, namely objects across cultures or national borders. "Comparative analysis" or "cross-cultural research" is therefore not a design, but an area of application in which other designs, with comparative objectives, such as comparative case studies, can be used. For example, Table 28 lists "cross-cultural/national research in the built environment" (Steinführer, 2005) and "comparative urban political research" (Denters & Mossberger, 2006) as two areas of application for comparative case studies in built environment research.

A term often found in the methodological literature, especially in architecture and urban design, is **"design research"**. The literature does not define "design research", while the term seems to have more than one meaning; does it mean design *as* research, research *on* design, or design *and* research as related activities? Yet, the literature does seem to discuss two seemingly unrelated questions. The first is the extent to which architectural design can be considered to be research, at least in an educational or scholarly context, if at all (e.g., see the special issue of *Journal of Architectural Education* (2007, volume 61, issue 1), which focuses on architectural design as a possible form of research, scholarship and inquiry). The second is the possible relationships between research and architectural design, and what the relevance of such relationships would be (e.g., see Symes, 1991; Ter Heide & Wijnbelt, 1996; Forsyth & Crewe, 2006; Forsyth, 2007). The first question will, however, not be considered, since this study takes the stance that "design, *as such*, is not research, *as such*" – a stance also taken by Groat and Wang (2002:102), and Forsyth and Crewe (2006:168).

Considering the second question regarding possible relationships between research and design, are there particular relationships between research and design that justifies the indexing of yet another standalone design, possibly called "design research"? Given the complex relationship between research and design and the various forms it can take, it seems so. Groat and Wang allude to such a complex relationship, but instead of referring to "design research" as a standalone design, they seem to equate it with action research:

> We discuss design as both outcome and generator of research. The chapter begins with a discussion of the general qualities and challenges of the relationship between design and research. Next we present several alternative models for the episodic incorporation of research in the design process. Finally we argue that design or action research outcomes can play a role in any of the seven research strategies we have presented in earlier chapters . . .
>
> (2002:13)

In a subsequent chapter on the relationship between research and architectural design, Groat and Wang (2002:111) reintroduce the notion of action research followed by a discussion of the sociologist Kurt Levin's notion of "field theory". Yet, they still do not clarify whether they regard design research as synonymous with action research. Considering the various purposes associated with PAR, including participation, action, problem solving, etc., as well as the different PAR subtypes identified in Table 25, I conclude that PAR can serve as a design for the various possible research scenarios that may arise from relationships between research and design. Given that the literature is not clear about whether "design research" is a standalone design or not, the notion of "design research" is perhaps best seen as an area of application for PAR in built environment practices. I therefore indicate "design research" as an area of application for "technical/scientific/collaborative PAR" and "practical/mutual and/or collaborative/deliberate PAR" (see Table 28). On the other hand, maybe "design research" is simply an architect's term for PAR.

This concludes the discussion of excluded "designs". Still, the index includes no less than 25 design subtypes. The following section clusters these subtypes into prototypical designs.

4.3.3 Clustering of design subtypes

As indicated above, the index of design subtypes includes 25 different subtypes. Yet, what prototypical designs do these 25 subtypes constitute? Table 26 shows a clustering of subtypes into prototypical research designs.

Table 26: Clustering of design subtypes

Research design subtypes	Research designs
Cross-sectional surveys	Surveys
Longitudinal surveys	
True experiments (aka laboratory experiments)	Experiments
Quasi-experiments (aka field/natural experiments)	
Modelling; Simulation	Modelling, simulation, mapping and visualisation
Mapping; Visualisation	
Content/textual analysis	Textual and narrative studies
Discourse/conversational analysis	
Historiography; Biography	
Ethnography (aka participant observation)	Field studies
Phenomenology	
Single/multiple case studies	Case studies
Comparative case studies	
Site/settlement analysis and assessment	Intervention research
Plan/policy analysis and assessment	
Diagnostic/clarificatory evaluation (aka *ex ante* evaluation)	Evaluation research
Implementation evaluation; Programme monitoring	
Outcome/impact evaluation (aka *ex post* evaluation)	
Technical/scientific/collaborative PAR	PAR
Practical/mutual and/or collaborative/deliberate PAR	
Emancipating/enhancing/critical science PAR	
Literature reviews; Research synthesis	Metaresearch
Conceptual analysis	
Typology/model/theory construction	
Philosophical/logical/normative argumentation	

Table 26 shows the 25 subtypes clustered into 10 prototypical designs, including: (1) surveys, (2) experiments, (3) modelling, etc., (4) textual and narrative studies, (5) field studies, (6) case studies, (7) intervention research, (8) evaluation research, (9) PAR and (10) metaresearch. If we consider the conditions for good typologies presented in

Chapter 1, then the 10 designs need to be exhaustive and mutually exclusive. Surely, they are exhaustive, since they cover all 25 subtypes. However, are they mutually exclusive? Based on what criterion are they distinct from each other?

Prominent methodologists differ in their criteria for distinguishing between different designs. Probably the most standard criterion for distinguishing between designs pertains to (1) the **level of control** to allow for different degrees of causal inference, resulting in a distinction between experimental vs. non-experimental designs (e.g., see De Vaus, 2001:43-48; and Bryman & Teevan, 2005:27-35). Others add a third category, namely pre-experimental or descriptive designs, in which there are low levels of control (e.g., see Andranovich & Riposa, 1993:51-61; Hedrick *et al*., 1993:41-67; and Bless & Higson-Smith, 2004:67). A major limitation of this criterion is of course the distinction of designs based on a positivist, deductive, or experimental notion of research at the expense of other forms of research.

Another criterion pertains to (2) the **time dimension**, resulting in a distinction between cross-sectional vs. longitudinal designs (e.g., see De Vaus, 2001:49-50; and Bryman & Teevan, 2005:35-42). Probably the most frequently found criterion, however, pertains to (3) the **methodological approach**, resulting in a distinction between quantitative vs. qualitative vs. mixed-method designs (e.g., see De Vos *et al.*, 2005; Neuman, 2006; Creswell, 2009:3-5; Leedy & Ormrod, 2010:94-97). This criterion can also result in a distinction between fixed vs. flexible vs. multiple and/or purposive designs (e.g., see Robson, 2002:84-86 & 201-219).

Other criteria pertain to (4) the **research objectives**, resulting in a distinction between explanatory vs. descriptive vs. exploratory designs (e.g., see Mouton & Marais, 1996:122), or (5) the **nature of evidence**, resulting in a distinction between empirical vs. nonempirical designs, while empirical designs are distinguished further between designs based on primary vs. secondary data, etc. (e.g., see Babbie & Mouton, 2001:76-79). Then there are those who list several designs, but without any distinction between them (e.g., see Hofstee, 2006:120-131).

Babbie (2007:86-113) regards most of the criteria above as valid considerations when designing a study, but refrains from presenting a range of prototypical designs, seemingly leaving it to the researcher to come up with an applicable design by working through relevant considerations. The difficulty with this approach, however, is that the researcher

has difficulty comparing different prototypical designs and weighing up their respective strengths and weaknesses.

Clearly, all five criteria discussed above yield inadequate ranges of designs, usually three designs at the most. Therefore, these criteria cannot distinguish the 10 designs listed in Table 26. What then serves as a common denominator between the 10 designs? If we consider the definition of "research design" as, amongst other things, a *logical* plan for research, then "core logics" emerges as a possible criterion for distinguishing between the 10 designs."Core logics" applies to any design, since any design, at least in terms of the definition, is based on a [logic]al plan. The literature has not yet documented the idea of "core logics" as a criterion for distinguishing between designs. Fouché and De Vos, however, hint at the idea with their notion of "compact formulas" when they inquire about the meaning of the term "research design":

> Do they mean that the design is the overall plan for conducting the whole of the research study, or only those compact formulas – always called designs – given names such as case study, survey, classic experiment, and offered in methodology textbooks from which a researcher can select one?
>
> (2005b:132-133)

Nevertheless, the 10 designs can now be distinguished from each other using the criterion of "core logics". Table 27 shows the 10 designs and their corresponding unique core logics. These logics were formulated in consultation with Johann Mouton (personal discussion, 10 June 2009).

Table 27: Research designs and their corresponding core logics

Research designs	Core logics
Surveys	Generalisation
Experiments	Causal attribution
Modelling, simulation, mapping and visualisation	Prediction / Illustration
Textual and narrative studies	Interpretation (hermeneutical)
Field studies	Interpretation (ethnographical / phenomenological)
Case studies	Contextualisation
Intervention research	Intervention
Evaluation research	Evaluation
PAR	Participation / Action
Metaresearch	Various logics depending on the research objectives (e.g., to review, synthesise, analyse, etc.)

The core logic of a design is closely associated with its inherent purpose or function, which in turn is guided by a study's research question. Since all studies should have a research question, all studies should have a design with a core logic that best addresses that question. For example, if a study asks something about a particular population, then the core logic (i.e., purpose or function) of the study's design should be to **generalise** about that particular population, in which case a survey will probably be the most rational choice (see Table 27). Similarly, if a study asks something about a unique phenomenon, then the core logic of the study's design should be to **contextualise** that phenomenon, in which case a case study will probably be the most rational choice. If a study asks about the outcome of an intervention, then the core logic of the study's design should be to **evaluate** that intervention, and so on.

Thus far, I have interpreted the core logics of generalisation, contextualisation and evaluation, while the remaining core logics require interpretation at this point.

The core logic of experiments is **causal attribution**, since the inherent purpose or function of both true and quasi-experiments is to establish whether there is causality between dependent and independent variables whilst controlling for extraneous variables. The core logic of "modelling, simulation, mapping and visualisation" is **prediction** or **illustration** of what is likely to exist, occur, or change, etc., in the real world. Modelling and simulation studies are likely to use the logic of prediction, while mapping and visualisation studies are likely to use illustration.

All of the qualitative subtypes, except the case study ones, are clustered into two designs, namely, “textual and narrative studies”, and “field studies” – both with the core logic of **interpretation**, albeit with different kinds of interpretation. The core logic of “textual and narrative studies” is the hermeneutical interpretation of any form of text, including texts that narrate the past, such as in historiography and biography. The core logic of “field studies” is the ethnographical interpretation of cultural phenomena in their natural settings, such as in ethnography, or the phenomenological interpretation of individuals’ subjective experiences of and meanings attached to real life phenomena, such as in phenomenology. Another distinction between “textual and narrative studies” and “field studies” is that the former is likely to use secondary data in a textual format, while the latter is likely to use primary and sometimes secondary data.

The core logic of intervention research is simply to **intervene** in the built environment. The notion of “intervention research” has its roots in the field of developmental research, while the term “intervention research” is perhaps better known in the human service professions, especially in social work. De Vos (2005d:394), for example, provides a definition of intervention research in social work as research “carried out for the purpose of conceiving, creating and testing innovative human services approaches to preventing or ameliorating problems or to maintaining quality of life”. This definition can be adapted to the built environment professions so that it reads as “research carried out for informing planning or design interventions in the built environment”.

Intervention research will typically involve applied research conducted as part of planning or design processes to inform any type of intervention in the built environment, be it development, construction, renewal, etc. Hence, “site/settlement analysis and assessment” and “plan/policy analysis and assessment” were clustered to form “intervention research” as a prototypical design. In fact, the steps in LaGro’s (2008:13-20) site analysis process are similar to those in the Design and Develop (D&D) model of intervention research, which the human services professions adapted from the field of developmental research (De Vos, 2005d:394-395).

The core logic of PAR is for people to **participate** in the research and **act** on real world situations, especially situations concerning their or others’ wellbeing. The core logic of PAR ties in with the critical social science paradigm that believes social research should be accountable and socially robust to improve the wellbeing of people. Given that, built environment professions intervene in the built environment, while interventions such as

social housing projects, urban renewal schemes, etc., can affect the wellbeing of people for better or worse, it follows that PAR is certainly applicable to social research in the built environment.

However, PAR is not evident in methodological literature in the built environment field. This could be for a number of reasons. Firstly, PAR may be regarded as the prerogative of authors in the social sciences rather than those in built environment disciplines. Secondly, planning and design interventions may already have a measure of participation built into them, resulting in built environment professionals not regarding PAR as a worthwhile endeavour. Thirdly, built environment professionals probably do not see the emancipation of people as their ambit, etc.

Because metaresearch includes a clustering of various nonempirical subtypes, it does not have a specific core logic to distinguish it from other designs. Rather, it has various possible core logics depending on the objective of a study, for example: to review literature, synthesise research findings, analyse concepts, construct typologies, models or theories, or argue particular philosophical, logical, or normative standpoints.

Following these interpretations of the core logics of designs, I make a final point about research “designs” vs. “types”. Closer examination of the names of the last four designs in Table 26 reveals that they all end with the term “research”, such as intervention “research”, evaluation “research”, participatory action “research” and meta-“research”. This naming convention, as well as the fact that designs like intervention and evaluation research are usually conducted using a combination of other designs,[19] suggests the possibility of seeing these designs as research “types”. The index presented earlier indeed showed that the literature tends to discuss intervention, evaluation and PAR as research types rather than designs or methods. Robson also regards evaluation as a type of research:

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19 As noted by Hedrick *et al*.:

> Research designs may differ as a function of both the context and the scope of the two types of studies. Because applied researchers are often given multiple questions to answer, because they must work in real-world settings, and because they often must have multiple measures of effects, they are more likely to use multiple research methods in a single study than are basic researchers. Although using multiple methods may be necessary to address multiple questions, it may also be a strategy used to approach a difficult problem from several directions, thus lending additional confidence to the study.
>
> (1993:10)

> An evaluation is a study which has a distinctive purpose; it is not a new or different research [design]. . . . The position taken here is that evaluation research is essentially indistinguishable from other research in terms of design, data collection techniques and methods of analysis. . . . Evaluation research can, and does, make use of flexible and fixed research [designs] including virtually all of [their] variants . . .
>
> (2002:202-205)

De Vos *et al*. (eds.) (2005) probably also regard intervention, evaluation and PAR as types of research since they group all three of them under the title of "types of research". Moreover, Fouché and De Vos (2005a:108-109) discuss intervention, evaluation and PAR as denoting particular research purposes, and hence, types of research.

Nevertheless, given that intervention, evaluation and PAR meet the criteria for a research design put forward in this study, and that they have unique core logics, they are for the purpose of this study regarded as prototypical designs. Still, one has to acknowledge that they may well constitute research types outside the context of a typology of designs. Having identified designs applicable to social research in the built environment, it is now possible to outline those designs in terms of their subtypes, specialised subtypes and areas of application in built environment research and practice.

4.3.4 Outline of designs

Table 28 presents an outline of the 10 designs identified earlier on. The designs are listed in the far left column, followed by their subtypes, specialised subtypes, and areas of application in built environment research and practice. The outline serves to illustrate the extent to which the 10 prototypical designs are exhaustive and mutually exclusive by locating numerous other "designs", "methods", or "types" from the literature as subtypes, specialised subtypes or areas of application in built environment research and practice.

"Areas of application" refer to identifiable areas of research or practice within architecture, urban design and planning, with which the 10 designs and their respective subtypes or specialised subtypes tend to be associated. However, listed areas do not necessarily represent all possible areas of research and practice to which a particular design is applicable, but merely those that the literature specifically mentions to be applicable to a particular design. For example, Moudon (2003:373-374) refers to the applicability of case studies to only one area of research in urban design called "place studies". Yet, case studies, as will be shown in Chapter 5, are widely used in social research in the built environment.

Table 28 also shows that all of the subtypes are associated with at least one area of application in built environment research and practice, except longitudinal surveys, true experiments, literature reviews, research synthesis, conceptual analysis and philosophical/logical/normative argumentation. Longitudinal surveys and true experiments are, understandably, less applicable to social research in the built environment. Longitudinal surveys pose heavy time and cost constraints, while built environment researchers are usually less interested in tracking development and change over long periods. True experiments usually require laboratory conditions, whereas such conditions are far removed from built environment realities. Moreover, built environment researchers are usually less interested in attributing causality between variables.

Literature reviews, research synthesis, conceptual analysis and philosophical/logical/normative argumentation all deal with nonempirical objects and are therefore not necessarily associated with any particular area of application in built environment research and practice. Normative argumentation, however, which is about "what should be", are particularly useful to steer built environment research and practice into desirable directions, be it along the lines of aesthetics, sustainability, equity, redress, etc.

"Site/settlement analysis and assessment" and "plan/policy analysis and assessment" are included as subtypes under intervention research, but also as areas of application for a number of other subtypes. This is because they also constitute analytical phases within planning and design processes in which a number of other designs can be applied.

Table 28: Outline of designs (Continued on next page)

Research designs	Research design subtypes	Specialised subtypes	Areas of application
Surveys	Cross-sectional surveys		"Environment-behaviour studies" (Moudon, 2003:371-373); Site/settlement analysis and assessment (LaGro, 2008:79)
	Longitudinal surveys	Cohort studies, Panel studies, Tracer studies (Bless & Higson-Smith, 2004:66-67)	
Experiments	True experiments (aka laboratory experiments)	Pretest-posttest control group design; Solomon four-group design; Posttest-only control group design; Within-subjects design; Factorial designs (Leedy & Ormrod, 2010:231-233)	
	Quasi-experiments (aka field/natural experiments)	Nonrandomized control group pretest-posttest design; Simple time-series design; Control group, time-series design; Reversal time-series design; Alternating treatment design; Multiple baseline design (Leedy & Ormrod, 2010:233-238)	"Environment-behaviour studies" (Moudon, 2003:371-373)
Modelling, simulation, mapping and visualisation	Modelling; Simulation	Artificial neural network modelling (ANN) (Boussabaine & Kirkham, 2008); Mathematical modelling (Wang & Vom Hofe, 2007); Structured equation modelling (SEM) (Mouton, 2001:163); Computer simulation; Gaming; Simulation booths/models (Sanoff, 1991:135-158); Scenario analysis (Ratcliffe, 2008:222-226)	Urban and regional planning (Wang & Vom Hofe, 2007); Object-oriented programming and chaos modelling in planning (Cripeau, 2003:152-153); "Built environment futures" research (Ratcliffe, 2008:222-226); Environmental simulation (Sanoff, 1991:135-158); Participatory planning/design (Dandekar, 2005:133)
	Mapping; Visualisation	Social network analysis (SNA) (Pryke, 2008); Socio-spatial analysis (aka space syntax) (Khattab, 2005:141-158; Penn, 2008:18-25)	SNA in project management research (Pryke, 2008:171-172); Environmental measurement/mapping (Sanoff, 1991:1-36 & 73-106); Site/settlement analysis and assessment (LaGro, 2008:23-40 & 139-168); "Space-morphology studies" (Moudon, 2003:376-377)

Table 28: Outline of designs (Continued from previous page; Continued on next page)

Research designs	Research design subtypes	Specialised subtypes	Areas of application
Textual and narrative studies	Content/textual analysis	Qualitative/quantitative content analysis; Legal hermeneutics; Philosophical hermeneutics; Literary criticism (Mouton, 2001:166-167)	Plan/policy analysis and assessment (Gaber & Gaber, 2007:103-134)
	Discourse/conversational analysis		Socio-spatial analysis of spatial policy (Richardson & Jensen, 2003); Urban policy research (Jacobs, 2006)
	Historiography; Biography	Philosophical/conceptual historical research (Leedy & Ormrod, 2010:164-181)	"Urban-history studies"; "Typology-morphology studies" (Moudon, 2003:368-370 & 374-376); Feminist research in built environment professions (Morton & Wilkinson, 2008:45-46)
Field studies	Ethnography (aka participant observation)		"Environment-behaviour studies" (Moudon, 2003:371-373); Site/settlement analysis and assessment; Plan/policy analysis and assessment; Community participation (Greed, 1994; Dandekar, 2003:30-31 & 42-43; Gaber & Gaber, 2007:17-44; LaGro, 2008:79)
	Phenomenology		"Environment-behaviour studies"; "Image studies" (Moudon, 2003:368-373)
Case studies	Single/multiple case studies	Holistic/embedded single/multiple case studies (Yin, 2003:40)	"Place studies" (Moudon, 2003:373-374)
	Comparative case studies		Comparative urban political research (Denters & Mossberger, 2006); Cross cultural/national research in the built environment (Steinführer, 2005)

Table 28: Outline of designs (Continued from previous page; Continued on next page)

Research designs	Research design subtypes	Specialised subtypes	Areas of application
Intervention research	Site/settlement analysis and assessment	Design precedents (Groat & Wang, 2002; LaGro, 2008); Plan/design/policy programming (Zeisel, 2006:51-53)	Site/settlement analysis and assessment (Ellis, 2005; Glaumann & Malmqvist, 2005; Wlodarczyk, 2005; Wang & Vom Hofe, 2007; LaGro, 2008)
	Plan/policy analysis and assessment	Plan/design/policy review (Zeisel, 2006:53-59)	Plan/policy analysis and assessment (Gaber & Gaber, 2007)
Evaluation research	Diagnostic/clarificatory evaluation (aka *ex ante* evaluation)	Needs assessment studies (Robson, 2002:212-214; Babbie, 2007:350); Feasibility studies; Market studies (Bless & Higson-Smith, 2004:50)	Planning of sustainable settlements (Ellis, 2005); Site/settlement analysis and assessment (Glaumann & Malmqvist, 2005; Wlodarczyk, 2005; Wang & Vom Hofe, 2007; LaGro, 2008)
	Implementation evaluation; Programme monitoring	Pilot implementation studies; Reputability studies (Bless & Higson-Smith, 2004:51-52)	Plan/policy analysis and assessment (Talen, 1996)
	Outcome/impact evaluation (aka *ex post* evaluation)	Experimental/quasi-experimental outcome studies; Environmental/social impact assessment studies; Cost-benefit/utility studies (Robson, 2002:214; Babbie, 2007:350-361); Planning balance sheet (PBS); Goals-achievement matrix (GAM) (Hill, 1990:3-29); Post occupancy evaluation (POE) (Zeisel, 2006:59-64)	"Picturesque studies" (Moudon, 2003:370); Planning of sustainable settlements (Ellis, 2005); Site/settlement analysis and assessment (LaGro, 2008:84-85)

Table 28: Outline of designs (Continued from previous page)

Research designs	Research design subtypes	Specialised subtypes	Areas of application
PAR	Technical/scientific/ collaborative PAR		"Design research" (Groat & Wang, 2002:99-132)
	Practical/mutual and/or collaborative/deliberate PAR		"Design research" (Groat & Wang, 2002:99-132); Planning of sustainable settlements (Ellis, 2005)
	Emancipating/enhancing/ critical science PAR		Community-based planning/design (Al-Kodmany, 2001; McGrath *et al*., 2005); Feminist research in built environment professions (Morton & Wilkinson, 2008:45); "Phronetic planning research" (Flyvbjerg, 2002); Public participation (Cogan, 2003; Horelli, 2005)
Metaresearch	Literature reviews; Research synthesis	Meta-analysis (Leedy & Ormrod, 2010:282-283)	
	Conceptual analysis		
	Typology/model/theory construction	Grounded theory; Constant comparative method; Mathematical modelling (Mouton, 2001:177)	"Typology-morphology studies" (Moudon, 2003:374-376); Urban and regional planning (Wang & Vom Hofe, 2007)
	Philosophical/logical/ normative argumentation	Logical argumentation (Groat & Wang, 2002:301-340)	

4.4 SUMMARY AND CONCLUSION

The objective of this chapter was to identify designs applicable to social research in the built environment in order to see which designs to include in the typology and which not. Following a review of methodological literature in the built environment field, it was found that neither the notion of "research design", nor what constitutes prototypical designs, appeared to be clearly established in the literature. Thus, the literature lacks sources that discuss a comprehensive range of applicable designs.

Nevertheless, through a systematic review of the literature it was possible to index 25 research design subtypes applicable to social research in the built environment. The 25 subtypes were clustered into 10 prototypical designs, including (1) surveys, (2) experiments, (3) modelling etc., (4) textual and narrative studies, (5) field studies, (6) case studies, (7) intervention research, (8) evaluation research, (9) PAR and (10) metaresearch. These designs were considered exhaustive, since they cover all 25 subtypes, and mutually exclusive, since they have unique core logics – logics being a defining feature of research designs. The designs were then outlined to show their subtypes, specialised subtypes and areas of application in built environment research and practice.

The more important contribution of this chapter was the identification of designs applicable to social research in the built environment. In addition, the chapter clarified and standardised the names of different designs. Finally, the chapter provided a detailed outline of designs with numerous references, which researchers can now use as a catalogue to methodological sources in the built environment field.

Chapter 1 indicated that the construction of the typology should be balanced between representing the ideal ("what should be") and the real ("what is"). Having identified prototypical designs from the literature, I have looked at the "ideal". In the following chapter, I look at the "real", i.e., I determine designs used in social research in the built environment in order to see whether designs identified for inclusion in the typology are used in actual studies.

Chapter 5 Designs used in social research in the built environment

5.1 INTRODUCTION

Chapter 4 identified designs applicable to social research in the built environment in order to see which designs to include in the typology and which not. Ten prototypical designs, consisting of 25 subtypes, were identified. The objective of this chapter is to determine designs used in social research in the built environment in order to see whether designs identified for inclusion in the typology are used in actual studies.

To determine the nature and extent of research design usage, this chapter presents a survey of peer-reviewed and cited social research articles in the built environment field and a quantitative content analysis of their stated methodologies. Peer-reviewed and cited articles were surveyed because such articles generally represent higher levels of scholarship, and hence methodological rigour, compared to other forms of research output, such as edited books, book chapters, conference papers, professional magazines, etc (Forsyth & Crewe, 2006:171-173).

The more specific objectives of this chapter are to describe the (1) profile and (2) methodological characteristics of articles, (3) determine the extent to which articles use the designs identified in Chapter 4, and (4) examine the scholarly impact of articles that use different designs. The analysis of the methodological characteristics of articles was pivotal to the construction of the typology in the following chapter.

The contribution of this chapter consists in providing us with a better understanding of the methodologies of peer-reviewed and cited social research articles in the built environment field. Such an understanding is important for advancing research methodology in the built environment field and for giving scholars a better sense of the literature when designing research intended for peer-reviewed publication. In addition, the chapter provides a methodology for similar metamethodological studies of journal articles.

5.2 RESEARCH DESIGN AND METHODS USED IN THIS CHAPTER

The research design constituted a survey of journal articles and quantitative content analysis of their stated methodologies. The following sections discuss the methods used for data collection, analysis and interpretation.

5.2.1 Data collection

Data collection involved sampling of journals and sampling of articles within these journals, followed by a process of capturing data from these articles.

5.2.1.1 Sampling of journals

The first step was to sample a relevant journal in each of the three fields of architecture, urban design and planning. These journals would in turn be used for the sampling of articles, since "articles" constituted the unit of analysis in this chapter. I therefore first compiled a comprehensive sample frame of journals featuring social research in the built environment from three databases, namely, the *ISI Web of Knowledge*, the *International Bibliography of the Social Sciences*, and the *Thomson Reuters Master Journal List*.

Lists of journals were generated from the *ISI Web of Knowledge* using the *2008 Social Sciences Edition* of the *Journal Citation Reports* facility and the categories "development and planning", "geography", and "urban studies". Similarly, a list of journals was generated from the *International Bibliography of the Social Sciences* using the category "human geography and environment". Lists of journals from the *Thomson Reuters Master Journal List* were generated using various keywords related to architecture, urban design and planning.

The three lists of journals were collated while duplicates were removed together with all journals that were evidently not featuring social research or that were not related to architecture, urban design or planning. Table 29 and Table 30 outline the sample frame of all the journals within each of the three fields that (1) featured social research, and (2) were indexed in either the *ISI Web of Knowledge*, the *International Bibliography of the Social Sciences*, or the *Thomson Reuters Master Journal List*.

Table 29 lists the journals by their (1) fields, (2) SNIP values, and (3) abridged editorial policies. The urban design and planning journals are ranked according to their SNIP values ranging from highest to lowest. "SNIP" stands for "source normalised impact per paper", and is an indicator of a journal's contextual citation impact, taking into account the citation characteristics of the journal's subject field (Moed, 2005:40). SNIP values show the average number of times that a journal's articles are cited. Thus, the higher the SNIP value, the more significant the scholarly impact, and *vice versa*.

A SNIP value of "1" or higher implies a relatively significant scholarly impact, whereas a value below "1" implies a less significant impact. However, articles in the social sciences

and related applied fields, including the built environment, tend to receive fewer citations compared to articles in fields such as health and biomedical sciences (Moed, 2005:119-136). Therefore, although SNIP values account for the citation characteristics of a journal's subject field, SNIP values for built environment journals just below "1" can still imply a relatively significant impact.

Editorial policies for journals were downloaded from journal websites, while abridged summaries of policies were included in the sample frame (see Table 29). Editorial policies provided an indication of the extent to which journals featured social research in relation to architecture, urban design and planning.

Table 30 lists the journals in relation to other journals in the sample frame to which they are related. "Journal relatedness" refers to the strength of cited and citing relationships between the articles of different journals and is therefore an indicator of the extent to which related journals are similar in terms of their thematic or subject coverage. Simply put, authors tend to cite articles in the same journal or in other journals that cover similar themes or subjects.

"Relatedness values" (*R*-values) are calculated taking into account the:

- Number of citations from the citing journal to the cited journal;
- Total number of articles in the related journal; and
- Total number of citations from the citing journal.

Two relatedness values are calculated for each journal, based on citations from the current journal to the related journal and *vice versa* (Thomson Reuters, 2008). *R*-values for journals in the sample frame were obtained from the *ISI Web of Knowledge* using the *2008 Social Sciences Edition* of the *Journal Citation Reports*. Table 30 lists each journal together with its three most related journals within the sample frame based on each journal's three highest *R*-values (R_{max}). For example, the journal most related to *Journal of Architectural and Planning Research* is *Landscape and Planning*, although *Journal of Architectural and Planning Research* is only the third most related journal to *Landscape and Planning*.

Table 29: Sample frame of journals with SNIP values and abridged editorial policies

Fields	Journals*	SNIP values**	Abridged editorial policies
Architecture	Journal of Architectural & Planning Research	0.719	Original empirical research in architectural, design and planning research
Urban design	Journal of Urban Design	0.578	Original articles on physical aspects, practice, and implementation of design
	Urban Design	0.083	Unavailable
	Urban Design International	Unavailable	In-depth papers, reviews of projects, exchange of information
Planning	Landscape & Planning	1.073	Approaches to land use, focus on landscape ecology, planning and design
	Journal of the American Planning Association	1.024	Historical and contemporary planning experiences, theory and research
	International Journal of Urban & Regional Research	1.003	Theorising, debate, social science empirical research
	Urban Studies	0.955	Social and economic contributions to urban and regional planning
	Habitat International	0.889	Empirical research on planning, policy and implementation
	Urban Affairs Review	0.882	International research, empirical analysis on urban programs and policies
	Environment & Planning D - Society & Space	0.800	Interdisciplinary theory and research on dialogue between society and space
	European Urban & Regional Studies	0.763	Theoretical analysis and policy development
	Cities	0.648	All aspects of urban policy, exchange of ideas and information
	Journal of Planning Education & Research	0.499	Empirical research on planning theory, pedagogy, and practice
	Environment and Planning B - Planning & Design	0.487	Research in application of methods and theories to spatial problems
	Journal of Planning & Development – ASCE	0.480	Physical aspects of planning, practice, and implementation
	European Planning Studies	0.443	Theoretical, empirical articles on spatial processes and policies in Europe
	Progress in Planning	0.316	Research papers on planning, etc., policy innovation, EB policy reviews
	Town Planning Review	0.242	Empirical research on all aspects of planning
	Planning Practice & Research	0.221	Empirical research on planning practice
	Urban Forum	Unavailable	Developmental issues of urbanisation in the Third World
	Urban Policy & Research	Unavailable	Urban studies and policy in Australia, New Zealand and Asia Pacific

Notes: * Urban design and planning journals are ranked according to their SNIP values ranging from highest to lowest. ** Sourced from *Scopus*, February 2010.

Table 30: Sample frame of journals with related journals

Journals		Most related journals		Second most related journals		Third most related journals	
Titles	**Abbreviated Titles**	**Journals**	**R_{max}**	**Journals**	**R_{max}**	**Journals**	**R_{max}**
Journal of Architectural & Planning Research	JAPR	LUP	75.18	None		None	
Journal of Urban Design	JUD	Unavailable					
Urban Design International	UDI						
Urban Design	UD						
Landscape & Planning	LUP	JAPA	89.27	EP – B	77.37	JAPR	75.18
Journal of the American Planning Association	JAPA	JPER	1163.16	EP – B	388.5	US	267.88
Int. Journal of Urban & Regional Research	IJURR	C	293.26	UAR	215.72	US	185.08
Urban Studies	US	C	332.5	JAPA	267.88	UAR	236.63
Habitat International	HI	C	376.27	US	228.45	IJURR	155.89
Urban Affairs Review	UAR	US	236.63	IJURR	215.72	JAPA	157.66
Environment & Planning D – Society & Space	EP – D	IJURR	72.51	US	68.28	None	
European Urban & Regional Studies	EURS	EPS	298.13	IJURR	146.75	US	84.24
Cities	C	HI	376.27	US	332.5	IJURR	293.26
Journal of Planning Education & Research	JPER	JAPA	1163.16	US	164.83	EP – B	117.73
Environment & Planning B – Planning & Design	EP – B	JAPA	388.5	JPER	117.73	US	87.08
Journal of Planning & Development	JUPD	None		None		None	
European Planning Studies	EPS	EURS	298.13	IJURR	165.57	US	137.38
Progress in Planning	PP	US	84.1	EPS	71.14	None	
Town Planning Review	TPR	Unavailable					
Planning Practice & Research	PPR						
Urban Forum	UF						
Urban Policy & Research	UPR						

Note: R_{max} values sourced from the *ISI Web of Knowledge, 2008 Social Science Edition* of the *Journal Citations Report*.

A relevant journal in each of the three fields could now be sampled considering each journal's field, SNIP value, abridged editorial policy, and three most related journals. In the field of architecture, only one journal was listed, namely, *Journal of Architectural and Planning Research* (*JAPR*), so *JAPR* had to be sampled to represent the field of architecture. However, *JAPR* turned out to be a good selection because of its strong focus on social research and environment-behaviour studies in particular. Moreover, *Landscape and Planning*, a major journal with the highest SNIP value (1.073) in the field of planning, was also the journal most related to *JAPR*. Thus, some of the articles published in *JAPR* to some extent would have reflected characteristics of some of the articles published in *Landscape and Planning*.

In the field of urban design, the sampling of a relevant journal was also as restricted as in architecture. Here, only two of the three listed journals were indexed in *Scopus*, so the SNIP value for the third one was unknown. The *Journal of Urban Design* (*JUD*) has by far the higher SNIP value of the two journals indexed in *Scopus* (0.578 compared to 0.083). Moreover, *JUD* has a stronger focus on social research, while *Urban Design International* had a stronger focus on practice, i.e., articles were generally about accounts from practice instead of social research. No editorial policy was available for *Urban Design*. Therefore, *JUD* seemed the obvious choice in the field of urban design. Moreover, *JUD* is generally regarded as the "major academic urban design journal" (Forsyth & Crewe, 2006:164).

The sampling of a relevant journal from the field of planning was more complicated. The journal with the highest SNIP value (1.073), namely *Landscape & Planning*, is related to *JAPR*, while *JAPR* has already been sampled. Moreover, *Landscape & Planning* covered the field of landscape architecture, which fell outside the scope of this study. The journal with the second highest SNIP value (1.024), namely the *Journal of the American Planning Association*, is mainly practice-oriented.

Initially, the journals *International Journal of Urban and Regional Research*, *Urban Studies* and *Environment and Planning B* were sampled on a trial basis. However, following a pilot survey and content analysis of 58 articles from *International Journal of Urban and Regional Research*, 20 articles from *Urban Studies*, and 16 from *Environment and Planning B*, these journals were eventually also omitted for two reasons. Firstly, research in these journals, despite what could be learned from their editorial policies, appeared to be mostly in the fields of urban economics, urban geography and urban sociology, and was thus not really related to architecture, urban design or planning.

Secondly, the extent to which authors of articles in these journals discussed their designs and methods tended to be limited, while there seemed to be a preference for secondary data analyses and sophisticated computer programming techniques.

The journals *Habitat International*, *Urban Affairs Review*, *Environment & Planning D* and *Cities*, were expected to show the same characteristics as *Urban Studies* and *International Journal of Urban and Regional Research*, since they were related to both these journals, while *European Planning Studies* was of course limited to a particular region of study. Eventually, *Journal of Planning Education and Research* (JPER) was sampled as a relevant journal in the field of planning due to its strong focus on social research and broad focus on the pedagogy, theory, and implementation of planning.

The list of sampled journals therefore included:

- *Journal of Architectural and Planning Research* (*JAPR*);
- *Journal of Urban Design* (*JUD*); and
- *Journal of Planning Education and Research* (*JPER*).

These journals are standard academic journals with four issues per year, while articles are typically subjected to double blind peer-review. To contextualise these journals and their subject coverage, their editorial policies are subsequently presented.

Table 31: Editorial policies of sampled journals

Journal of Architectural and Planning Research	*Original empirical research papers, theoretical and integrative review articles, book reviews, and high-quality position papers keep readers up-to-date on the latest ideas, designs, and developments in these related fields. A blind refereed, scholarly journal, JAPR includes three major areas in its comprehensive, interdisciplinary coverage:* ***Architectural and design research*** *includes such topics as architectural technology; environment and behavior; design methods; architectural theory; architectural practice; design programming; business design research; computer applications to architectural practice; information technologies for design professionals; post-occupancy evaluation; environmental evaluation; social impact assessment; forecasting for the environmental professions; user participation; environmental education for the public; energy; site planning; topology; and building configuration.* ***Planning research*** *topics include, but are not limited to, social, geographic, administrative, and political studies of the factors that contribute to the shaping of neighborhoods, cities, and urban regions. Also of interest are topics that relate research to public or private sector policy-setting and administrative decision-making.* ***Architectural design, interior design, and urban design*** *may be of particular interest to practicing architects, designers, and urban planners. They cover the above topics as related to practice and allow for publication of architectural, interior, and urban design projects.*
Journal of Urban Design	*The Journal of Urban Design provides a new forum to bring together those contributing to this re-emerging discipline and enables researchers, scholars, practitioners and students to explore its many dimensions. The Journal publishes original articles in specialised areas such as urban aesthetics and townscape; urban structure and form; sustainable development; urban history, preservation and conservation; urban regeneration; local and regional identity; design control and guidance; property development; practice and implementation.*
Journal of Planning Education and Research	*JPER is a forum for planning educators and scholars (from both academia and practice) to present results from teaching and research that advance the profession and improve planning practice. The journal covers planning theory, planning practice, and planning pedagogy. It also encompasses disciplines drawn upon by planners such as urban geography, welfare economics, interest-group politics, policy analysis, as well as other subjects used in the planning classroom.* *Some of the key topics seen in recent articles include:* • *Citizen Participation/Dispute Resolution* • *Methods, Information Systems, Mapping* • *Demographic and Spatial Analysis, Applied GIS* • *Land Use, Zoning, Growth Management, Planning Law* • *Housing and Real Estate* • *Community Development, Neighborhood Planning* • *Transportation, Infrastructure and Capital Facilities* • *Environment, Energy and Natural Resources* • *Health, Education and Social Services* • *Economic Development* • *Design, Historic Preservation, Urban Form* • *Public Administration, Finance, Budgeting* • *Politics and Society* • *Global Context of Urban and Regional Planning* • *International Planning & Development* • *Planning and Urban History* • *Ethics and Professional Concerns*

5.2.1.2 Sampling of articles

The second step was to sample articles from each of the three selected journals. The survey pertained to all cited empirical and nonempirical social research articles between 1996 and 2005 in each journal, including articles as part of special or theme issues. *Scopus* was used to compile a list of relevant articles, including their titles, years of publication, abstracts, and citation figures. The selection of articles was more of a census really, since all articles to which the study pertained were included. This included just over 60% of all articles in the three journals (see Table 32). The following types of articles were excluded:

- Editorials, commentaries, rejoinders, debates, symposia, practice notes, and book reviews;
- Articles that were evidently not social research (such as articles featuring building and construction technology, information and communication technology, computer programming, etc.), and articles that were evidently not related to architecture, urban design or planning (such as articles related to landscape architecture, real estate, etc.); and
- Articles that had not been cited by the time of the survey.

The rationale for including cited articles only was that it was important to see the extent to which designs were used in articles that actually had some scholarly impact in the field. Articles were sampled over a 10-year period, i.e., from 1996 to 2005, for a number of reasons:

- *JUD* only first appeared in 1996, while the idea was to have the same period across all three journals for the purpose of comparison;
- There was a sufficient window period between 2005 and the time of conducting the survey in 2008/9 to ensure that articles published as recently as 2005 had had a chance to be cited;
- The 10-year period provided a sufficient time span to pick up possible methodological trends; and
- The 10-year period included enough articles to yield a sufficient sample size for the purpose of data analysis.

Table 32 outlines the sample frame and sample of articles to which the study pertained, including the total number of articles (N), the number of sampled articles (n), and the sample sizes expressed as percentages by journal and year. A total of 381 articles, or

about 61% of all articles, were sampled and surveyed. *JAPR* had the smallest sample (48% of all its articles), mostly because *JAPR* had a larger proportion of uncited articles that were excluded from the sample. Both *JUD* and *JPER* had samples that included just over two-thirds of all their articles. Appendix 3 lists the titles, authors and years of publication of all 381 sampled articles.

Table 32: Outline of the sample frame and sample of articles

Year	Journal											
	Journal of Architectural and Planning Research			*Journal of Urban Design*			*Journal of Planning Education and Research*			Total		
	N	n	Sample size (%)	N	n	Sample size (%)	N	n	Sample size (%)	N	n	Sample size (%)
1996	19	6	31.6	17	7	41.2	19	16	84.2	55	29	52.7
1997	15	10	66.7	14	9	64.3	22	14	63.6	51	33	64.7
1998	20	9	45.0	15	9	60.0	27	15	55.6	62	33	53.2
1999	19	13	68.4	14	12	85.7	37	22	59.5	70	47	67.1
2000	21	11	52.4	11	9	81.8	26	18	69.2	58	38	65.5
2001	22	10	45.5	15	11	73.3	26	15	57.7	63	36	57.1
2002	21	13	61.9	15	13	86.7	30	22	73.3	66	48	72.7
2003	24	15	62.5	12	9	75.0	30	24	80.0	66	48	72.7
2004	28	5	17.9	16	10	62.5	26	15	57.7	70	30	42.9
2005	22	9	40.9	16	10	62.5	27	20	74.1	65	39	60.0
Total	**211**	**101**	**47.9**	**145**	**99**	**68.3**	**270**	**181**	**67.0**	**626**	**381**	**60.9**

5.2.1.3 Data capturing

For all three sampled journals, the volumes ranging from 1996 to 2005 were available in hard copy in the library of the University of Pretoria. I therefore had direct access to hard copies of all the sampled articles. Data were collected through a meticulous reading of titles, abstracts, introductions, and discussions of designs and methods. Articles in which discussions of designs and methods were absent or cryptic were read in their entirety to get a proper understanding of their profile, methodological characteristics, and research design in particular.

The profile and methodological characteristics of articles were coded as numerical data and captured in an MS Excel spreadsheet. Table 33 outlines the data-capturing instrument, or database structure, including the different variables, i.e., data fields, that captured the profile and methodological characteristics of articles, and, where applicable, the categories for each variable. The first part of the instrument pertained to the bibliographic details and profile of articles, while the second part pertained to their methodological characteristics.

Variables pertaining to methodological characteristics were grouped according to the dimensions of social research as outlined in Chapter 2. Thus, variables pertaining to research aims and purposes were grouped as part of the teleological dimension, and so forth. The last part of the instrument included variables pertaining to the use of different research designs and subtypes as identified in Chapter 4.

Table 33: Data-capturing instrument for the journal article survey (Continued on next page)

Sets of variables	Variables	Variable categories
Bibliographic details and profile of articles		
Bibliographic details and profile of articles	**Journal, volume, issue, year of publication, and title**	(Not applicable)
	Number of citations	(Not applicable)
	Field	Architecture
		Urban design
		Planning
	Discussion of research designs and methods	In a standalone section
		Limited within the text or a footnote
		None
	Number of references to methodology textbooks	(Not applicable)
	Bibliographic details of three most recent textbooks	(Not applicable)
Methodological characteristics of articles		
Characteristic within the sociological dimension	**Research contexts**	Basic
		Applied
Characteristics within the teleological dimension	**Research aims**	Theoretical
		Practical
		Multiple
	Research purposes (theoretical) ("Interpretation" was not included at the time of the survey)	Explanatory
		Exploratory
		Descriptive
		Multiple
	Research purposes (practical) ("Emancipation" was not included at the time of the survey)	Formative
		Evaluative
		Multiple

Table 33: Data-capturing instrument for the journal article survey (Continued from previous page)

Sets of variables	Variables	Variable categories
Characteristic within the ontological dimension	**Objects of study**	Social objects
		Built environment objects
		Planning and design
Characteristics within the methodological dimension	**Methodological paradigms**	Post-positivist
		Interpretative social science
		Critical social science (Including feminist and post-modern)
		Pragmatic
	Methodological approaches	Quantitative
		Qualitative
		Mixed-method
	Sources of data	Primary
		Secondary
		Hybrid
	Research design subtypes	Various subtypes as identified in Chapter 4
	Research designs	Various designs as identified in Chapter 4

Following the capturing of data from all 381 articles, each field in the database was systematically checked and cleaned to eliminate possible data-capturing errors or inconsistencies. The coding and capturing of data, especially data pertaining to some methodological characteristics, was a time-consuming task. The data-capturing instrument as it appears in Table 33 had to undergo several refinements as data coding and capturing proceeded. This, despite the data-capturing instrument that was used for the thesis survey in Chapter 3 having served as a pilot and a basis for the development of this instrument.

For example, all articles previously coded had to be recoded and captured every time variables or variable categories were changed. Although it was usually straightforward to determine articles' research aims, methodological approaches, sources of data, etc., it was seldom straightforward to determine some of their other characteristics, especially their methodological paradigms. This was because authors seldom, if ever, explicated the paradigms in which they worked. This literally required a reading between the lines of most articles to determine whether they were predominantly in a post-positivist,

interpretative, critical, or pragmatic paradigm. Consequently, the field pertaining to methodological paradigms, together with a few others, ended up being coded and captured twice to ensure that interpretations were as consistent as possible.

Nevertheless, the instrument now serves as a useful contribution to the built environment field as it comprises a piloted and well-structured instrument for similar metamethodological studies of journal articles, not only in architecture, urban design and planning, but also in associated fields such as landscape architecture, interior architecture, construction management, etc.

5.2.2 Data analysis

The cleaned MS Excel dataset was exported to SPSS for data analysis. Contingency tables and descriptive statistics were used for the bulk of the analysis. Inferential statistics, such as the Chi-square test and Analysis of Variance (ANOVA), were used to test whether relationships in contingency tables were statistically significant at the 95% confidence level.

Since all articles to which the survey pertained were sampled, data were not weighed, as was the case with theses. However, article citations were weighed. Because the citations of articles published earlier were on average higher than those of articles published later (since earlier articles have had more time to be cited), the citations of later articles had to be weighed incrementally over time to a base period to make them comparable to those of articles in the base period.

Articles across the 10-year period were grouped into five consecutive two-year periods, namely (1) 1996 – 1997, (2) 1998 – 1999, (3) 2000 – 2001, (4) 2002 – 2003, and (5) 2004 – 2005, with the first period of 1996 – 1997 constituting the base period. Two-year intervals were chosen, as mean citations did not differ that much on a year-to-year basis. While citations of articles in the base period were assigned a weight of “1”, citations of articles in the subsequent four periods were weighed incrementally to make them comparable to the relatively higher citations of articles in the base year.

Weighting factors were first calculated per journal for each of the four subsequent periods. A weighting factor for a respective journal and period was calculated by dividing the mean citation figure for the base year by the mean citation figure for the respective journal and period. Mean citation figures were only calculated after outliers, i.e., very high citation figures, had been excluded. Very high citation figures in each period were

classified as outliers if they were higher than the mean citation figure for that period plus one standard deviation. Weighed citations for articles in a respective journal and period were then calculated by multiplying actual citations of articles with the weighting factor for that particular journal and period. For example, weighed citations for articles published in *JAPR* between 1998 and 1999 were calculated using the following formula:

$$Actual\ citation\ figures_{JAPR(1998-1999)} \times \left(\frac{Mean\ citation\ figures_{JAPR(1996-1997)}}{Mean\ citation\ figures_{JAPR(1998-1999)}}\right)$$

The same formula was used for the calculation of weighted citations for articles across each journal and each period following the base period.

5.2.3 Data interpretation

Data are interpreted by generalising about peer-reviewed and cited social research articles in the built environment field by observing patterns and relationships in contingency tables. Data are interpreted with regard to the (1) profile and (2) methodological characteristics of articles, (3) use of research designs, and (4) scholarly impact of articles using different designs. In the following section, the first set of findings about the profile of articles is presented by journal, since the profile of articles was largely dependent on the editorial style of the journals in which they were published.

I initially intended to present the second set of findings about methodological characteristics by field, as well as by period, namely 1996 – 2000 and 2001 – 2005. Contingency tables with Chi-square tests were run to examine the extent to which there were statistically significant differences between methodological characteristics when compared by field as opposed to period. A comparison of probability (*p*) values resulting from these tests revealed that three of seven characteristics yielded statistically significant differences when compared by field as opposed to only one characteristic when compared by period.

Therefore, methodological characteristics of articles, seen as a whole, did not seem to differ significantly by period, whereas they seemed to differ more so by field. The second set of findings about methodological characteristics is therefore presented by field. The third and fourth sets of findings about research design usage and the scholarly impact of articles are presented mainly by themselves.

5.3 FINDINGS

Findings are presented with regard to the (1) profile and (2) methodological characteristics of articles, (3) use of research designs, and (4) scholarly impact of articles using different designs.

5.3.1 Profile of articles

The profile of articles is described by looking at (1) their objects of study, (2) the extent to which authors discussed their designs and methods, and (3) the extent to which authors referenced methodology textbooks.

5.3.1.1 Objects of study

Table 34 shows the distribution of objects of study in articles across the three journals.

Table 34: Objects of study

Objects of study	Journal							
	JAPR		*JUD*		*JPER*		Total	
	Count	%	Count	%	Count	%	Count	%
Social objects	33	39.7	16	22.3	30	21.7	79	27.0
Built environment objects	6	7.2	15	20.8	9	6.5	30	10.2
Planning and design	44	53.0	41	56.9	99	71.7	184	62.8
Total	**83**	**100.0**	**72**	**100.0**	**138**	**100.0**	**293**	**100.0**

Note: Data exclude articles based exclusively on nonempirical or metaresearch.

The bulk of articles (about 63%) were about planning and design, followed by social objects (27%) and built environment objects (about 10%). In fact, the bulk of articles across all three journals were about planning and design. Yet, this is explainable, since, as mentioned in Chapter 3, postmodernism has deflected attention away from normative towards procedural issues in recent decades (Talen & Ellis, 2002:38). Most articles that were about social objects featured environment-behaviour studies. This area of research therefore continues to be prominent in social research in the built environment. Table 35 provides five examples of titles for each object of study randomly selected from the sample of 381 articles.

Table 35: Examples of journal article titles

Social objects	STRANGERS IN THE NIGHT: WOMEN'S FEAR OF SEXUAL ASSAULT ON URBAN COLLEGE CAMPUSES CULTURAL VALUES AND HOUSING BEHAVIOR IN SPONTANEOUS SETTLEMENTS DOES NEOTRADITIONAL DEVELOPMENT BUILD COMMUNITY? CONFLICTS OF LIVEABILITY IN THE 24-HOUR CITY: LEARNING FROM 48 HOURS IN THE LIFE OF LONDON'S SOHO INFORMATION AND ATTITUDES TOWARD MENTAL HEALTH CARE FACILITIES: IMPLICATIONS FOR ADDRESSING THE NIMBY SYNDROME
Built environment objects	FORMALIZING THE INFORMAL? - THE TRANSFORMATION OF CAIRO'S REFUSE COLLECTION SYSTEM FORM, FUNCTION AND SIGN: SIGNIFYING THE PAST IN URBAN WATERFRONT REGENERATION REINVENTING MAIN STREET: FROM MALL TO TOWNSCAPE MALL AUTHENTICITY AND THE SENSE OF PLACE IN URBAN DESIGN TRANSPORTATION AS A STIMULUS OF WELFARE-TO-WORK: PRIVATE VERSUS PUBLIC MOBILITY
Planning and design	PRIVATE-PROPERTY DECISION MAKERS AND THE QUALITY OF URBAN DESIGN HOW TO THINK ABOUT PLACE AND PEOPLE APPROACHES TO POVERTY THE SIGNIFICANCE OF THE EARNED INCOME TAX CREDIT AS NEIGHBORHOOD INVESTMENT UP-ZONING NEW YORK CITY'S MIXED-USE NEIGHBORHOODS: PROPERTY-LED ECONOMIC DEVELOPMENT AND THE ANATOMY OF A PLANNING DILEMMA PARTICIPATION, DECENTRALIZATION, AND CIVIL SOCIETY: INDIGENOUS RIGHTS AND DEMOCRACY IN ENVIRONMENTAL PLANNING FARM-TO-SCHOOL: STRATEGIES FOR URBAN HEALTH, COMBATING SPRAWL, AND ESTABLISHING A COMMUNITY FOOD SYSTEMS APPROACH

The titles of all 381 articles can be seen in Appendix 3. The following section describes the extent to which authors discussed their designs and methods.

5.3.1.2 Extent to which authors discussed their designs and methods

Table 36 shows the extent to which authors discussed their designs and methods across the three journals. Designs and methods were discussed either in a standalone section, typically the “methods” section of articles, or within the text or a footnote, i.e., a limited discussion as part of another section such as the introduction, or they were not discussed at all. Both empirical and nonempirical articles were coded, since it was argued that

nonempirical articles, even though they usually do not include empirical methods, should at least mention the overall design of the study, whether it comprised a literature review, conceptual analysis, theory construction, etc.

Table 36: Extent to which authors discussed their designs and methods

Discussion of designs and methods	Journal							
	JAPR		*JUD*		*JPER*		Total	
	Count	%	Count	%	Count	%	Count	%
In a standalone section	54	53.5	33	33.3	73	40.3	160	42.0
Limited within the text or a footnote	19	18.8	29	29.3	72	39.8	120	31.5
None	28	27.7	37	37.4	36	19.9	101	26.5
Total	**101**	**100.0**	**99**	**100.0**	**181**	**100.0**	**381**	**100.0**

Table 36 shows that 42% of all articles included a discussion of designs and methods in a standalone section, while about 32% included a discussion limited within the text or a footnote, and about 27% included no discussion at all. *JAPR* had a significantly larger percentage of articles that included a discussion as a standalone section (about 54%), while *JUD* had a significantly larger percentage that included no discussion at all (about 37%) (χ^2 (4, N = 381) = 21.763, p = .00).

Whereas the survey of theses in Chapter 3 revealed that as many as 43% of architectural theses included no discussion compared to only about 13% of planning theses, this survey revealed that *JAPR*, which includes mostly architectural articles, clearly had higher levels of methodological discussion compared to the urban design and planning journals. However, additional cross-tabulations revealed that *JUD* included a larger percentage of nonempirical articles compared to the other two journals, while nonempirical articles included significantly more articles with no discussion of designs and methods. The extent to which authors of social research articles in the built environment field discuss their designs and methods seems to depend on whether the research was empirical or nonempirical, as well as on the editorial style of the journal in which the article is published.

Suffice to conclude that as many as about 74% of articles included some methodological discussion, which means that we can attach a reasonable degree of validity to the methodological content analysis in this chapter. However, many authors, similar to almost all students who wrote the theses surveyed in Chapter 3, seldom followed a coherent or

funnellike approach in their discussions by first explicating the overall design followed by a detailing of methods.

Moreover, numerous authors claimed to have conducted case studies. However, upon closer examination of their discussions, they appeared simply to use the term “case study” to denote the setting for their research with little consideration of actual case study designs and methods. Lauria and Wagner conducted a survey of journal articles reporting case study research in planning and similarly found that “very few authors who claim that they conducted a case study give any source for their research design and methodology or guidance for the reader regarding what they actually did” (2006:375). Therefore, like in built-environment theses, methodological discussion in social research articles in the built environment field can also improve with regard to the coherence of discussions, as well as the extent to which nonempirical designs are discussed.

5.3.1.3 Extent to which authors referenced methodology textbooks

The extent to which authors referenced methodology textbooks is indicative of the extent to which they critically reflected on their methodologies. Two sets of data are presented in this subsection, namely (1) the extent to which authors referenced methodology textbooks, i.e., the proportion of articles that included references to textbooks, and (2) the mean number of textbooks referenced in those articles that did include references. Considering the outline of the different types of methodological literature in Chapter 4, it should be noted that only references to basic and applied research textbooks were recorded, while references to metamethodological and applied methodological journal articles were not recorded. Table 37 shows the extent to which authors referenced methodology textbooks across journals.

Table 37: Extent to which authors referenced methodology textbooks

Methodology textbooks referenced	Journal							
	JAPR		*JUD*		*JPER*		Total	
	Count	%	Count	%	Count	%	Count	%
Yes	34	33.7	11	11.1	32	17.7	77	20.2
No	67	66.3	88	88.9	149	82.3	304	79.8
Total	**101**	**100.0**	**99**	**100.0**	**181**	**100.0**	**381**	**100.0**

Table 37 shows that only about 20% of all articles referenced methodology textbooks. Again, *JAPR* had a significantly larger percentage of articles that referenced textbooks

(about 34%), while *JUD* had a significantly larger percentage of articles that did not (about 89%) (χ^2 (2, N = 381) = 17.138, p = .00). Again, this relationship is probably due to differences in editorial styles and proportions of empirical vs. nonempirical articles between the two journals. Table 38 shows the mean number textbooks referenced in the 20% of articles that did include references. The table also includes standard deviations, modes, as well as the minimum and maximum number of textbooks referenced across journals.

Table 38: Mean number of textbooks referenced

Textbooks referenced	Journal			
	JAPR	*JUD*	*JPER*	Aggregate
Mean	3.4	1.6	2.3	2.7
Standard deviation	3.9	1.0	2.9	3.2
Mode	1	1	1	1
Minimum	1	1	1	1
Maximum	16	4	17	17

Table 38 shows that articles that did reference textbooks referenced an average of close to three different textbooks. Again, articles in *JAPR* included the largest mean number of textbooks referenced (3.4), while *JUD* included the smallest (1.6), yet, these differences were not statistically significant this time (F (2, 381) = 1.756, p = .18). Moreover, the aggregate standard deviation (3.2) and maximum number of references in the sample (17) suggest that outliers are likely to have skewed the aggregate mean upwards. Thus, it is perhaps safer to interpret the aggregate mode of references (1) and to say that social research articles in the built environment field that do reference textbooks reference only one textbook on average.

Large numbers of references, particularly in *JAPR* (16) and *JPER* (17), were due to metamethodological and applied methodological journal articles in which the theme of course was about methodology. For example, the titles of those articles that included 16 and 17 references respectively are *Qualitative methods in planning research and practice* (Dandekar, 2005), and *Utilizing mixed-method research designs in planning: The case of 14th Street, New York City* (Gaber & Gaber, 1997).

The bibliographic details of up to three of the most recent textbooks referenced by each article were also captured. This gave an additional qualitative dataset of 120 records that

provided a more nuanced picture of cited textbooks. The dataset included a wide range of texts from different fields. The wide range may have contributed to a wide range of designs in articles, which is useful considering the objective of this chapter to determine designs used in social research in the built environment.

Strangely, only two of the 11 texts listed in Chapter 4, namely Sanoff's *Visual research methods in design* (1991) and current and older editions of Zeisel's *Inquiry by design: Environment/Behavior/Neuroscience in architecture, interiors, landscape, and planning* (2006), appeared in the dataset. Yet, many of the texts listed in Chapter 4 were published during or after 2005, while the sample of articles extended to 2005 only.

Many of the texts in the dataset were referenced only once or twice. Only three texts were referenced three or more times, including current and older editions of Yin's *Case study research: Design and methods* (2003) (referenced eight times), Zeisel's *Inquiry by design* (2006) (referenced six times), and Patton's *Qualitative evaluation and research methods* (2002) (referenced three times). Quite a number of texts were referenced twice, some of which included Bechtel *et al.*'s *Methods in environmental and behavioral research* (1987), Strauss' *Basics of qualitative research: Techniques and procedures for developing grounded theory* (1998), and Flyvbjerg's *Making social science matter: Why social inquiry fails and how it can succeed again* (2001).

Therefore, the impact of those texts listed in Chapter 4 appears to have been limited, even though they are actually the more relevant ones for social research in the built environment. Apart from the limited impact of texts in the built environment field, no text in the social sciences either, apart from Yin's text, had a noticeable impact. Thus, the built environment field is yet to see an influential text that can also assist authors to better explicate and discuss their methodologies. Nevertheless, given the high percentage of articles that did include some methodological discussion, we can now examine the methodological characteristics of articles with some assurance.

5.3.2 Methodological characteristics of articles

The methodological characteristics of articles are described by looking at the extent to which articles featured different (1) research contexts, (2) research aims, (3) research purposes, (4) methodological paradigms, (5) methodological approaches, and (6) sources of data.

5.3.2.1 Extent to which articles featured different research contexts

Chapter 2 distinguished between basic and applied research, with basic research typically conducted within universities for an academic audience with the aim of generating new knowledge, and applied research typically conducted outside universities for a practitioner audience with the aim of using existing knowledge and scientific methods to solve real world problems. Following on from the discussion in Chapter 2, the distinction between basic and applied research can become quite fuzzy in the built environment field since the object of basic research is often a tangible planning or design problem in the real world, while the actual beneficiaries of basic research are often practitioners rather than fellow academics. For consistency, the key criterion used to determine whether an article featured predominantly basic or applied research was the audience for which the article seemed most intended. Table 39 shows the extent to which articles featured different research contexts across architecture, urban design and planning.

Table 39: Extent to which articles featured different research contexts

Research contexts	Field							
	Architecture		Urban design		Planning		Total	
	Count	%	Count	%	Count	%	Count	%
Basic	28	54.9	50	44.2	107	49.3	185	48.6
Applied	23	45.1	63	55.8	110	50.7	196	51.4
Total	**51**	**100.0**	**113**	**100.0**	**217**	**100.0**	**381**	**100.0**

Table 39 shows that the proportion of basic vs. applied research is about equal, suggesting the importance of both in the built environment field. Architecture had the largest percentage of basic research articles (about 55%), while urban design had the largest percentage of applied research articles (about 56%), although these differences were not statistically significant (χ^2 (2, N = 381) = 1.711, p = .43). Given the equal importance of basic and applied research in the built environment field, “research context” seems an important criterion for the classification of designs in the construction of the typology in the next chapter. As Creswell says: “The selection of a research design is also based on . . . the audiences for the study” (2009:3).

5.3.2.2 Extent to which articles featured different research aims

Table 40 shows the extent to which empirical articles featured different research aims across the three fields. Note that the data in Table 40 and the remaining tables in this subsection are based on empirical articles, since the subsequent characteristics do not really apply to nonempirical or metaresearch.

Table 40: Extent to which articles featured different research aims

Research aims	Field							
	Architecture		Urban design		Planning		Total	
	Count	%	Count	%	Count	%	Count	%
Theoretical	12	27.3	24	28.9	48	28.9	84	28.7
Practical	12	27.3	11	13.3	24	14.5	47	16.0
Multiple	20	45.5	48	57.8	94	56.6	162	55.3
Total	**44**	**100.0**	**83**	**100.0**	**166**	**100.0**	**293**	**100.0**

Note: Data exclude articles based exclusively on nonempirical or metaresearch.

Table 40 shows that more than half of all empirical articles (about 55%) featured multiple aims, while about 29% featured theoretical aims and 16% featured practical aims. Although there were differences in the proportions of articles with different aims across the three fields, they were not statistically significant (χ^2 (4, N = 293) = 5.077, p = .28). However, when the results were compared over time, significantly larger percentages of articles published between 2001 and 2005 featured theoretical and practical aims compared to articles published between 1996 and 2000, during which a larger percentage featured multiple aims (χ^2 (2, N = 293) = 6.145, p = .046). This means that articles focused increasingly on either theoretical or practical research. In fact, “research aims” was the only characteristic of articles that yielded statistically significant differences over time.

This increasing focus on either theoretical or practical research is perhaps indicative of increasing disciplinary specialisation or “compaction” as referred to in the literature. For example, Goldstein and Carmin surveyed articles published in the *Journal of the American Planning Association* between 1963 and 2002 and found that planning scholarship has become theoretically and methodologically more “compact”. With this they meant that “the repertory of concepts, methods, tools, and innovations is exposed to critical appraisal and modification based on (more or less) consensual criteria that stem

from well-known and broadly accepted disciplinary goals and ideals" (2006:68). They also found an increasing trend towards "scientific" rather than "technical" articles (2006:72-74), seen here as "theoretical" as opposed to "practical" articles. Given the increasing trend towards either theoretical or practical research, "research aim" also seems an important criterion for the classification of designs.

5.3.2.3 Extent to which articles featured different research purposes

Prominent methodologists regard the purpose of a study as integral to its design (e.g., see Babbie, 2007:87-90). "Research purpose" is therefore no doubt an important criterion for the classification of designs. Yet, do purposes typical of social research feature in social research in the built environment? Recall that Chapter 2 identified two sets of purposes for theoretical and practical research respectively. Table 41 shows the extent to which empirical articles with *theoretical* aims featured different *theoretical* purposes across the three fields, while Table 42 shows the extent to which articles with *practical* aims featured different *practical* purposes.

Table 41: Extent to which articles featured different theoretical purposes

Theoretical purposes	Field							
	Architecture		Urban design		Planning		Total	
	Count	%	Count	%	Count	%	Count	%
Explanatory	6	18.8	7	9.7	19	13.4	32	13.0
Exploratory	0	0.0	5	6.9	12	8.5	17	6.9
Descriptive	17	53.1	46	63.9	85	59.9	148	60.2
Multiple	9	28.1	14	19.4	26	18.3	49	19.9
Total	**32**	**100.0**	**72**	**100.0**	**142**	**100.0**	**246**	**100.0**

Note: Data exclude articles based exclusively on nonempirical or metaresearch, as well as articles with practical research aims only.

Table 41 shows that the purpose of the bulk of empirical articles with theoretical aims (about 60%) was to describe a phenomenon, followed by about 20% that had multiple purposes, 13% that had an explanatory purpose, and about 7% that had an exploratory purpose. "Description" is clearly a more important theoretical purpose in social research in the built environment field. Although there were differences in the proportions of articles featuring different theoretical purposes across the three fields, these differences were, however, not statistically significant (χ^2 (6, N = 246) = 5.829, p = .44).

Table 42: Extent to which articles featured different practical purposes

Practical purposes	Field							
	Architecture		Urban design		Planning		Total	
	Count	%	Count	%	Count	%	Count	%
Formative	5	29.4	13	48.1	17	27.0	35	32.7
Evaluative	7	41.2	10	37.0	38	60.3	55	51.4
Multiple	5	29.4	4	14.8	8	12.7	17	15.9
Total	**17**	**100.0**	**27**	**100.0**	**63**	**100.0**	**107**	**100.0**

Note: Data exclude articles based exclusively on nonempirical or metaresearch, as well as articles with theoretical research aims only.

Table 42 shows that the purpose of the bulk of articles with practical aims (about 51%) was to evaluate a phenomenon, followed by about 33% that had a formative purpose, and about 16% that had multiple purposes. Articles with formative purposes typically informed planning and design interventions or formulated planning and design recommendations, guidelines, etc. Still, "evaluation" is clearly a more important practical purpose in social research in the built environment field. Again, although there were differences in the proportions of articles featuring different practical purposes across the three fields, these differences were, however, not statistically significant (χ^2 (4, N = 107) = 7.439, p = .11). Nevertheless, all the purposes typical of social research indeed feature in social research in the built environment.[20] Consequently, all the designs identified in Chapter 4 are likely to feature as well.

5.3.2.4 Extent to which articles featured different methodological paradigms

Chapter 2 defined "methodological paradigms" as broad philosophies or coherent systems of thinking on how to conduct research. According to Dainty, the philosophical assumptions behind a study will influence the methodological approach and research design – even in a field as applied as construction management (2008:3-4). If this is so for a field like construction management, then it is likely to be even more so for architecture, urban design and planning, since the relationship with social research in these fields is arguably stronger than in construction management.

20 Although the data-capturing instrument did not allow for the capturing of "interpretative" or "emancipatory" purposes, both these, especially interpretative purposes, seemed evident in articles.

The stance of this study is that any social study in the built environment is implicitly located within a particular methodological paradigm, whether a researcher knowingly decides to work in that paradigm or not. The mere choice of a particular design or method is likely to steer the research into a particular direction where certain ontological and epistemological assumptions are inevitable. Yet, if Neuman (2006:79) says these paradigms "are rarely declared explicitly in research reports, and many researchers only have a vague awareness of them", then how was it possible to determine the methodological paradigms of articles?

I identified paradigms by means of a meticulous interpretation of each article's research aim and purpose, methodological approach, mode of reasoning, etc. For example, articles that tested hypotheses using quantitative data and deductive modes of reasoning were assigned to the post-positivist paradigm, while articles that interpreted phenomena in natural settings using qualitative data and inductive modes of reasoning were assigned to the interpretative paradigm. Articles that commented on social reality for purposes of action or emancipation, especially from feminist or post-modern standpoints, were assigned to the critical paradigm. Articles that were more pragmatic about such considerations were assigned to the pragmatic paradigm.

Because methodological paradigms translate ontological and epistemological concerns into methodological questions, they serve as an important criterion for classifying designs conducive for particular ontological and epistemological assumptions. However, to what extent do different paradigms feature in empirical social research in the built environment, or is such research generally paradigm-free or simply pragmatic? Table 43 shows the extent to which empirical articles featured different methodological paradigms across the three fields.

Table 43: Extent to which articles featured different methodological paradigms

Methodological paradigms	Field							
	Architecture		Urban design		Planning		Total	
	Count	%	Count	%	Count	%	Count	%
Post-positivist	10	22.7	7	8.4	28	16.9	45	15.4
Interpretative social science	6	13.6	17	20.5	9	5.4	32	10.9
Critical social science	3	6.8	7	8.4	31	18.7	41	14.0
Pragmatic	25	56.8	52	62.7	98	59.0	175	59.7
Total	**44**	**100.0**	**83**	**100.0**	**166**	**100.0**	**293**	**100.0**

Notes: Data exclude articles based exclusively on nonempirical or metaresearch. "Critical social science" included feminist and post-modern articles.

Table 43 shows that the bulk of articles (about 60%) featured pragmatism, followed by post-positivism (about 15%), critical social science (including feminism and postmodernism) (about 14%) and interpretivism (about 11%). A significantly larger percentage of architectural articles featured post-positivist research, a significantly larger percentage of urban design articles featured interpretative and pragmatic research, while a significantly larger percentage of planning articles featured critical social science (χ^2 (6, N = 293) = 22.480, p = .00). Still, the bulk of articles across all three fields featured pragmatic research. The predominance of pragmatism is indicative of the applied or problem-solving nature of social research in the built environment, with fewer researchers contributing towards theory that is either explicitly positivist, interpretative or critical.

Still, articles featured all four of the main paradigms in social science. This representation of all four paradigms is in accordance with Næss and Saglie's remarks that planning research, and social research in the built environment as such, ought to embrace various paradigms (2000:743). "Methodological paradigm" remains an important criterion for classifying designs applicable to social research in the built environment.

5.3.2.5 Extent to which articles featured different methodological approaches

Chapter 2 defined "methodological approaches" as involving strategies that revolve around the use of different types of data, be it quantitative, qualitative or mixed. It also suggested that positivism tends to be associated with quantitative approaches, interpretivism with qualitative approaches, pragmatism with mixed-method approaches, and critical social science with participatory approaches. Thus, mixed-method

approaches ought to have been predominant in articles considering the predominance of pragmatism.

Yet, I coded articles as having used mixed-methods only if methods for data collection, analysis and interpretation were genuinely integrated rather than parallel (e.g., see Yin's point about this (2006:41-42)). As discussed in Chapter 2, a mixed-method study is one in which quantitative and qualitative methods are combined into a single study through within-method or between-method triangulation. Table 44 shows the extent to which empirical articles featured different methodological approaches across the three fields.

Table 44: Extent to which articles featured different methodological approaches

Methodological approaches	Field							
	Architecture		Urban design		Planning		Total	
	Count	%	Count	%	Count	%	Count	%
Quantitative	12	27.3	10	12.0	55	33.1	77	26.3
Qualitative	22	50.0	56	67.5	89	53.6	167	57.0
Mixed-method	10	22.7	17	20.5	22	13.3	49	16.7
Total	**44**	**100.0**	**83**	**100.0**	**166**	**100.0**	**293**	**100.0**

Note: Data exclude articles based exclusively on nonempirical or metaresearch.

Table 44 shows that the bulk of articles featured predominantly qualitative approaches (57%), followed by quantitative approaches (about 26%), and mixed–method approaches (about 17%). Architectural articles had a significantly larger percentage of mixed-method approaches, urban design articles had a significantly larger percentage of qualitative approaches, while planning articles had a significantly larger percentage of quantitative approaches (χ^2 (4, N = 293) = 14.533, p = .01).

Although pragmatism is the predominant paradigm, mixed-method approaches feature least of all. Even though my interpretation of "mixed-methods" was strict, it seems that methodological paradigms and approaches are not necessarily congruent with each other in social research in the built environment. Yet, particular paradigms and approaches still seem congruent with each other in associated fields. Dainty (2008:1-6) conducted a similar survey of articles in the journal *Construction Management and Economics* – a field dominated by positivism – and found quantitative approaches dominating while qualitative approaches made up a small proportion of articles (2008:4-6).

The predominance of qualitative approaches in social research in the built environment can be due to a number of reasons, including a reaction against post-positivist research, a greater interest in understanding social reality in the built environment, a turn towards more participatory approaches, a lack of quantitative research skills amongst built environment researchers, etc. The predominance of pragmatism, however, also suggests that it may simply be due to pragmatic considerations, meaning that qualitative approaches are "what works" for social researchers in the built environment.

5.3.2.6 Extent to which articles featured different sources of data

Table 45 shows the extent to which empirical articles featured different sources of data across the three fields.

Table 45: Extent to which articles featured different sources of data

Sources of data	Field							
	Architecture		Urban design		Planning		Total	
	Count	%	Count	%	Count	%	Count	%
Primary	23	59.0	35	50.0	48	32.4	106	41.2
Secondary	7	17.9	13	18.6	55	37.2	75	29.2
Hybrid	9	23.1	22	31.4	45	30.4	76	29.6
Total	**39**	**100.0**	**70**	**100.0**	**148**	**100.0**	**257**	**100.0**

Notes: Data exclude articles based exclusively on nonempirical or metaresearch. The number of articles from which it could not be determined what sources of data they featured equalled 36.

The bulk of articles featured primary data (about 41%), followed by hybrid sources of data (i.e., primary and secondary) (about 30%), and secondary data (about 29%). Moreover, a significantly larger percentage of architectural articles featured primary data, while a significantly larger percentage of planning articles featured secondary data (χ^2 (4, N = 257) = 15.349, p = .00). Architectural articles include more environment-behaviour studies, which usually rely on primary data, especially questionnaire surveys and field observations. Planning researchers are usually more familiar with secondary data such as census and other community survey datasets, since such sources are often used in intervention and evaluation research in planning practice.

To conclude; social research in the built environment field have diverse methodological characteristics, including multiple research contexts, research aims, research purposes,

methodological approaches, methodological paradigms, and sources of data. Having examined the methodological characteristics of articles, we can now determine which designs authors used.

5.3.3 Use of research designs

This subsection forms the crux of this chapter since we can now see whether the designs identified in Chapter 4 are used in actual studies. The use of research designs is determined in terms of the extent to which articles featured (1) single vs. multiple designs, (2) different designs, and (3) different design subtypes.

5.3.3.1 Extent to which articles featured single vs. multiple designs

Chapter 4 argued that the core logic of a design is closely associated with its inherent purpose or function, which in turn is guided by a study's research question. Since all studies should have a single main research question, all studies should have a single design with a core logic that best addresses that question.

However, the complexities of social research sometimes result in multifaceted projects with multiple designs rolled out sequentially or concurrently. Moreover, Chapter 4 also argued that designs such as intervention research, evaluation research, and PAR may include multiple designs depending on the objectives of a study. Therefore, it is useful first to see the extent to which articles featured single vs. multiple designs.

Table 46: Extent to which articles featured single vs. multiple designs

Single vs. multiple designs	Field							
	Architecture		Urban design		Planning		Total	
	Count	%	Count	%	Count	%	Count	%
Single	49	96.1	103	91.2	196	90.3	348	91.3
Multiple	2	3.9	10	8.8	21	9.7	33	8.7
Total	**51**	**100.0**	**113**	**100.0**	**217**	**100.0**	**381**	**100.0**

Table 46 shows that most articles (about 91%) featured a single design, while the proportions of articles across all three fields that featured a single design were all above 90%. Consequently, there were no statistically significant differences across fields (χ^2 (2, N = 381) = 1.736, p = .42). Considering the point that intervention, evaluation and PAR studies may include multiple designs, additional cross-tabulations, however, revealed that

articles with multiple designs, featured designs such as case studies and metaresearch more so than intervention, evaluation or PAR. Irrespective of multiple or single designs, the extent to which articles featured different designs can now be examined.

5.3.3.2 Extent to which articles featured different designs

Table 47 shows the extent to which articles featured different designs across the three fields.

Table 47: Extent to which articles featured different designs

Research design	Field							
	Architecture		Urban design		Planning		Total	
	Count	%	Count	%	Count	%	Count	%
Surveys	8	14.8	9	7.3	27	11.3	44	10.6
Experiments	8	14.8	8	6.5	3	1.3	19	4.6
Modelling, etc.	1	1.9	1	0.8	17	7.1	19	4.6
Textual and narrative studies	2	3.7	13	10.6	16	6.7	31	7.5
Field studies	4	7.4	11	8.9	8	3.4	23	5.5
Case studies	12	22.2	21	17.1	59	24.8	92	22.2
Intervention research	1	1.9	10	8.1	2	0.8	13	3.1
Evaluation research	7	13.0	13	10.6	31	13.0	51	12.3
PAR	3	5.6	1	0.8	11	4.6	15	3.6
Metaresearch	8	14.8	36	29.3	64	26.9	108	26.0
Total	**54**	**100.0**	**123**	**100.0**	**238**	**100.0**	**415**	**100.0**

Note: The total count of 415 designs is necessarily higher than the total number of surveyed articles (n = 381) due to some articles having featured multiple designs.

Most importantly, Table 47 shows that all the prototypical designs identified in Chapter 4 are used in social research in the built environment. Moreover, not only are all the designs used on an aggregate level, each design was also used at least once in each of the three fields.[21] Therefore, not only do all the prototypical designs apply to social research in the built environment in general, they also apply to each of the three fields.

[21] The differences in research design usage across the three fields are statistically significant (χ^2 (20, N = 381) = 65.644, p = .00). However, Chi-square results may be invalid due to low counts in some cells.

Thus, the typology to be constructed in the next chapter will be equally applicable to architecture, urban design or planning.

Table 47 shows that the bulk of articles featured metaresearch (26%), case studies (about 22%), evaluation research (about 12%) and surveys (about 11%). The larger proportion of metaresearch is an encouraging finding. Built environment disciplines are primarily applied rather than descriptive disciplines, which mean that they are more problem-solving rather than knowledge-generating disciplines. In addition, built environment disciplines are surrounded by descriptive disciplines that arguably have stronger traditions of doing empirical research.

It therefore makes sense for built environment researchers to conduct metaresearch on existing research and knowledge from related fields such as urban geography, urban sociology, environmental psychology, etc., to help solve research problems/questions in their own fields (also see Næss & Saglie, 2000:734). Thus, it makes sense for built environment researchers to review and synthesise research from related fields, or to use such research to analyse concepts, construct typologies, models or theories that are applicable to their own areas of research and application, or to present philosophical or normative arguments about issues in their own fields.[22]

Apart from metaresearch and the various logics associated with it, the other prevailing logics in empirical social research in the built environment are therefore the logics of contextualisation (due to case studies), evaluation (due to evaluation research), and generalisation (due to surveys). Given some of the methodological characteristics of articles discussed earlier, the prevalence of these logics and their associated designs seems plausible.

For example, Table 34 showed that most objects of study in social research in the built environment constitute planning and design. Such practices are typically context-specific requiring contextualisation in research. Furthermore, the bulk of social research in the built environment constitutes applied research, which is likely to involve evaluation of problems in the built environment, or evaluation of planning and design interventions into such problems. Surveys abound as well, probably because generalisation is such a widely used logic in most areas of social research.

22 Note the various metaresearch subtypes identified in Chapter 4.

While metaresearch has been discussed earlier, case studies and evaluation research require discussion at this point. “Case studies” evidently remains an important design for social research in the built environment. As suggested above, this has much to do with the logic of contextualisation and the fact that many objects of study in social research in the built environment are indeed context-specific. However, the use of case studies in planning research has not gone without criticism. Lauria and Wagner surveyed articles featuring case studies on planning practice and found contradictory evidence for the extent to which what they call “deductive” case studies were able to resolve theoretical contentions in planning. They also raised several concerns about the methodological rigour of some case studies, and doubt whether improvements in case study methodology would necessarily resolve theoretical contentions in planning (2006:375).

The prominence of evaluation research in planning is not surprising. Khakee argues that shifts in evaluation research from first- to fourth-generation evaluation correspond with shifts in planning theory from rational to communicative theory (1998:363-371). Thus, there has been a longstanding association between planning and evaluation research. However, Khakee also argues that fourth-generation evaluation, which is associated with communicative planning theory, is not evaluation in a traditional sense (1998:361). Fourth-generation evaluation involves discourse amongst stakeholders and is associated with social constructivist ontology and qualitative approaches. Voogd indeed argues that the shift towards participatory democracy, communicative planning theory, and fourth-generation evaluation resulted in the decline in systematic evaluation in planning research in the Netherlands (1996:123). Still, it is not possible to say to what extent fourth-generation evaluation has indeed replaced systematic or earlier generations of evaluation, since Table 47 does not distinguish between different generations of evaluation.

The six remaining designs, namely experiments, modelling etc., textual and narrative studies, field studies, intervention research and PAR, all contributed relatively small percentages towards the overall distribution of designs. As mentioned in Chapter 4, discourse analysis, a subtype of textual and narrative studies, has received a lot of attention in planning and policy and housing studies. However, Table 48 subsequently shows that discourse analysis contributed less than 1% towards the overall distribution of design subtypes. Discourse analysis arguably poses difficulties for built environment researchers due to its in-depth engagement with language, while such a philosophic-linguistic type of analysis is arguably more the domain of philosophy.

Watson argues for “practice movement” research on planning practice as a critical contribution to planning theory, while she encourages the use of all the qualitative designs, including textual and narrative studies, field studies, and case studies in particular (2002:184-185). Whereas “case studies” was shown to be prominent, the contributions by textual and narrative studies and field studies remained small. Flyvbjerg (2002) argues for “phronetic planning research” as a means to action and emancipation in planning practice and argues for the use of methods associated with PAR. Yet, PAR contributed less than 4% towards the overall distribution of designs. Intervention research contributed the smallest percentage (less than 4%), yet, this is plausible since intervention research is associated more with planning and design practice rather than with research.

To conclude: all the designs identified in Chapter 4 to be applicable to social research in the built environment are indeed used in such research. This suggests that there is a reasonable fit between prototypical designs and designs used in actual studies. While the predominance of metaresearch, case studies, evaluation research and surveys seems plausible, built environment scholars actually encourage the use of textual and narrative studies, field studies, case studies, and PAR. Yet, the use of all these, except case studies, remained limited. However, the discrepancy between designs advocated by scholars and those featured in actual studies does not hold implications at this point for the index of prototypical designs nor the construction of the typology. What is more important to note is that the index includes a *comprehensive* range of prototypical designs and that the survey identified no additional designs.

5.3.3.3 Extent to which articles featured different design subtypes

Having determined the extent to which the 10 prototypical designs are used in social research in the built environment, it now remains to be seen to what extent the 25 subtypes are used. Because the survey did not distinguish between the three PAR subtypes, Table 48 shows the extent to which articles featured 22 of the 25 subtypes.

Table 48: Extent to which articles featured different design subtypes

Research design subtypes	Count	%
Cross-sectional surveys	41	9.6
Longitudinal surveys	3	0.7
True experiments (aka laboratory experiments)	9	2.1
Quasi-experiments (aka field/natural experiments)	11	2.6
Modelling; Simulation	14	3.3
Mapping; Visualisation	6	1.4
Content/textual analysis	14	3.3
Discourse/conversation analysis	4	0.9
Historiography; Biography	17	4.0
Ethnography (aka participant observation)	18	4.2
Phenomenology	5	1.2
Single/multiple case studies	74	17.2
Comparative case studies	18	4.2
Site/settlement analysis and assessment	6	1.4
Plan/policy analysis and assessment	7	1.6
Diagnostic/clarificatory evaluation (aka *ex ante* evaluation)	10	2.3
Implementation evaluation; Programme monitoring	16	3.7
Outcome/impact evaluation (aka *ex post* evaluation)	27	6.3
PAR	15	3.5
Literature reviews; Research synthesis	23	5.4
Conceptual analysis	11	2.6
Typology/model/theory construction	32	7.5
Philosophical/logical/normative argumentation	48	11.2
Total	**429**	**100.0**

Note: The total count of 429 design subtypes is necessarily higher than the total number of sampled articles (n = 381) due to some articles having featured multiple design subtypes.

Most importantly, Table 48 shows that all the subtypes identified in Chapter 4 are used in social research in the built environment. The three most prominent subtypes included single/multiple case studies (about 17%), philosophical/logical/normative argumentation (about 11%), and cross-sectional surveys (about 10%).

Longitudinal surveys constituted the least used subtype, having been used only three times. This is plausible, since longitudinal surveys are associated less with built environment research and more with political sciences and education research in which subjects are traced over long periods through panel or tracer studies. Longitudinal surveys of course also pose heavy time and cost constraints. Discourse/conversational

analysis constituted the second-least used subtype, most likely for reasons mentioned earlier.

Phenomenology constituted the third-least used subtype. This is perhaps strange, since Kevin Lynch's theories about cognitive mapping of urban spaces, and Christopher Norberg-Schultz's theories about *genius loci*, or "sense of place", are well known in architecture and urban design, providing popular grounds for research in these fields. Nevertheless, all the subtypes indexed in Chapter 4 are indeed used in social research in the built environment. Thus, there is also a reasonable fit between indexed subtypes and subtypes used in actual studies, while the survey identified no additional subtypes.

5.3.4 Scholarly impact of articles

The scholarly impact of research can be assessed in different ways. One way is to consider the extent to which an article is cited in other published articles. If an article has been peer-reviewed and published, scholars are likely to cite such an article if they find it to be an important theoretical, methodological or empirical contribution to a field. The more an article is cited, the more impact it has on a field. The scholarly impact of articles surveyed in this study was therefore determined by looking at mean citations of articles that featured different designs and design subtypes. Determining the scholarly impact of articles through citations is nowadays possible due to the availability of bibliometric data on databases such as the *ISI Web of Knowledge*, *Scopus*, and even *Google Scholar*. The scholarly impact of articles is now examined by looking at mean citations of articles featuring different (1) designs and (2) design subtypes.

5.3.4.1 Scholarly impact of articles featuring different designs

Table 49 shows mean citations of articles featuring different designs. Designs are ranked in order from those with the highest to lowest mean citation. Recall that the survey excluded articles that had not been cited yet. Thus, nil citations did not influence mean citation figures.

Table 49: Mean citations of articles featuring different designs

Research designs	Citations			
	Count	Mean	Standard deviation	Maximum
Modelling, etc.	19	12.8	11.5	45
Metaresearch	108	10.3	11.8	66
PAR	15	9.4	9.5	36
Case studies	92	7.9	9.5	66
Field studies	23	7.7	7.1	35
Surveys	44	7.1	7.8	36
Experiments	19	6.8	5.4	19
Evaluation research	51	6.1	4.7	21
Textual and narrative studies	31	4.8	4.0	16
Intervention research	13	3.8	3.6	12
Aggregate	**415**	**8.0**	**8.9**	**66**

Notes: Data are based on citations weighed to the 1996/7 base period. Research designs are ranked in order from those with the highest to lowest mean citation.

Table 49 shows that cited social research articles in the built environment field are cited eight times on average following a number of years after publication. However, the accompanying high standard deviation (8.9) suggests considerable variation in citation figures, meaning that outliers skew mean citation figures considerably. Articles featuring designs that were cited more than the aggregate average included modelling etc. (cited about 13 times on average), metaresearch (cited about 10 and a half times on average), and PAR (cited about nine and a half times on average). However, given that modelling etc. and PAR had low counts compared to metaresearch (19 and 15 respectively compared to 108), it is perhaps safer to conclude that metaresearch articles appear to have more scholarly impact than articles featuring other designs. Indeed, Moed (2005:39-40) confirms that review articles, which is a type of metaresearch, tend to have higher citations. Intervention articles appear to have the least scholarly impact. Again, this can be explained by the fact that such articles typically carry unique accounts from practice while providing less of a theoretical or empirical contribution to the field.

Even though there are different mean citations for articles that featured different designs, these differences are, however, not statistically significant (F (9, 314) = 1.526, p = .14). Again, Moed (2005:39-40) confirms that citation impact is more a function of author,

institution and subfield rather than the type of study. Therefore, apart from metaresearch and intervention research, we should not take differences between mean citations of articles featuring other designs too literally.

Yet, what do the data in Table 49 then suggest in terms of this study? Firstly, all the prototypical designs identified in Chapter 4 featured in articles that have *some* scholarly impact. Thus, none of the prototypical designs were limited to studies with zero impact. Even studies as practical or applied as intervention research had some impact. Secondly, if built environment researchers want to increase their impact, they should aim for metaresearch articles, such as review, theoretical or methodological articles. This may require training in nonempirical research skills in addition to empirical skills, including high-level analytical abilities such as abstract reasoning, critical thinking, logical argumentation, etc. Yet, very few textbooks provide guidance on how to do meta-theoretical literature reviews, conceptual analysis, theory construction, or philosophical argumentation. A typology of designs that distinguishes between empirical and nonempirical designs may provide a backdrop and motivation for textbooks to include an equal emphasis on skills associated with both forms of research. Thirdly, given Moed's observations on citation trends, the fact that metaresearch articles are cited more and intervention articles least of all provides some confirmation of the validity of the survey.

5.3.4.2 Scholarly impact of articles featuring different design subtypes

The mean citations of articles featuring different designs can now be broken down for articles featuring different subtypes. Table 50 shows mean citations of articles featuring different subtypes. Subtypes are ranked in order from those with the highest to lowest mean citation.

Table 50: Mean citations of articles featuring different design subtypes

Research design subtypes	Citations			
	Count	Mean	Standard deviation	Maximum
Modelling; Simulation	14	16.0	11.7	45
Conceptual analysis	11	11.5	10.4	32
Typology/model/theory construction	32	11.2	13.4	66
Literature reviews; Research synthesis	23	10.0	13.2	62
Philosophical/logical/normative argumentation	48	9.4	9.7	59
PAR	15	9.4	9.5	36
Single/multiple case studies	74	8.3	10.0	66
Ethnography	18	8.1	7.9	35
Implementation evaluation; Programme monitoring	16	8.0	6.1	21
Cross-sectional surveys	41	7.3	8.0	36
Quasi-experiments	11	7.1	5.6	19
Comparative case studies	18	6.2	7.0	31
Phenomenology	5	6.1	2.7	8
True experiments	9	5.9	5.4	19
Outcome/impact evaluation	27	5.8	3.9	16
Content/textual analysis	14	5.5	4.4	16
Mapping; Visualisation	6	5.5	5.0	13
Site/settlement analysis and assessment	6	5.0	4.6	12
Longitudinal surveys	3	4.6	3.8	9
Diagnostic/clarificatory evaluation	10	4.4	3.0	10
Historiography; Biography	17	4.2	3.6	16
Plan/policy analysis and assessment	7	2.7	2.2	7
Discourse/conversation analysis	4	2.7	0.9	4
Aggregate	**429**	**8.0**	**8.9**	**66**

Notes: Data are based on citations weighted to the 1996/7 base period. Research design subtypes are ranked in order from those with the highest to lowest mean citation.

Table 50 shows that of the “modelling, simulation, mapping and visualisation” prototype, modelling and simulation articles in particular have the most scholarly impact (cited 16 times on average). Mapping and visualisation articles, however, have little scholarly

impact in comparison (cited about five and a half times on average). Table 50 confirms the scholarly importance of metaresearch, showing all four its subtypes at the top following modelling and simulation. The titles of and subtypes used in the three most cited articles in the sample are: (1) *Understanding the link between urban form and nonwork travel behaviour*, based on two subtypes, i.e., a single case study and model construction (cited 66 times), (2) *Network power in collaborative planning*, based on philosophical argumentation (cited 47 times), and (3) *On form versus function: Will the new urbanism reduce traffic, or increase it?*, based on modelling/simulation (cited 45 times). Yet, the high citation figure of the latter is probably due more to the contentious topic of whether new urbanism is sustainable or not rather than the use of modelling or simulation. Still, modelling and simulation of course provide grounds for further hypothesis-testing research.

Despite the emphasis on discourse analysis in the literature, one finds that not only is discourse analysis almost the least used subtype (see Table 48), it also has the least scholarly impact. However, discourse analysis may feature more in socio-political journals such as *Urban Affairs Review* and *Journal of Urban Affairs*. Nevertheless, like all the prototypical designs, all the subtypes identified in Chapter 4 featured in articles that have *some* scholarly impact. Thus, none of the subtypes were limited to studies with zero impact.

5.4 SUMMARY AND CONCLUSION

The objective of this chapter was to determine designs used in social research in the built environment in order to see whether designs identified for inclusion in the typology are used in actual studies. Thus, a survey of articles and a quantitative content analysis of their stated methodologies were conducted. The more specific objectives were to describe the (1) profile and (2) methodological characteristics of articles, (3) determine the extent to which articles used the designs identified in Chapter 4, and (4) examine the scholarly impact of articles that used different designs.

It was found that articles could improve with regard to the extent and quality of methodological discussion, and the extent to which methodology textbooks are referenced. Articles typically featured a combination of both basic and applied research, multiple research aims, descriptive and evaluative purposes, pragmatic paradigms, qualitative approaches, and primary data sources. These methodological characteristics often differed significantly across architecture, urban design and planning.

Most importantly, the survey found that articles featured all the prototypical designs and their subtypes identified for inclusion in the typology. Moreover, the survey identified no additional design or subtype. Thus, there is a reasonable fit between prototypical designs and designs used in actual studies. In addition, all the designs featured in articles that had some scholarly impact. Having confirmed the index of prototypical designs, the following chapter classifies these designs into a typology and then tests the typology.

Chapter 6 Towards a typology of designs for social research in the built environment

6.1 INTRODUCTION

Chapter 4 identified designs applicable to social research in the built environment, while Chapter 5 verified the use of those designs in actual studies. Thus, we can now construct a typology of designs for social research in the built environment. The objective of this chapter is therefore to construct and test the typology. The more specific objectives are to (1) review existing typologies, (2) construct the typology, and (3) test the typology to see how well it classifies the designs of actual studies. The contribution of this chapter consists foremost in the presentation and substantiation of the typology. In addition, the chapter provides us with a better understanding of existing typologies.

6.2 RESEARCH DESIGN AND METHODS USED IN THIS CHAPTER

The research design constituted the construction of the typology. I first reviewed existing typologies to get an idea of the structure and classification criteria of different typologies. Classification criteria for the typology constructed as part of this study were then identified using the five-dimensional framework developed in Chapter 2. The classification criteria consisted of six methodological considerations across the dimensions of social research. I subsequently constructed the typology using a matrix that classifies the 10 prototypical designs identified in Chapter 4 in terms of those considerations.

The typology was tested using data from the journal article survey. The relationships between the designs and methodological characteristics of articles were analysed to see the likelihood of the classifications of designs in terms of the six methodological considerations. Thus, the typology was "tested" against a large sample of peer-reviewed and cited social research articles in the built environment field.

Since all data from the journal article survey were nominal, relationships between the designs and methodological characteristics of articles were analysed in contingency tables, while Chi-squares tested for statistical significance at the 95% confidence level. Contingency coefficients, a measure of association used in nonparametric statistics (hereafter denoted as "*C*"), were used to examine the strength of relationships. Contingency coefficients were used instead of a coefficient for parametric statistics since the data did not conform to a normal distribution.

In addition to tables, the relationships between the designs and methodological characteristics of articles were illustrated using “perceptual maps”. These maps were generated through a multi-dimensional scaling method in SPSS known as “Correspondence Analysis”. Correspondence Analysis takes a compositional approach and describes relationships between nominal variables in a correspondence table (similar to a contingency table) and a perceptual map in which the categories of the variables are represented in a multidimensional space using proximity to indicate the level of association among rows and columns. The maps provided a clearer picture of the relationships between the designs and methodological characteristics of articles.

The validity of the analysis depended much on how the methodological contents of articles were coded. For example, if an article was coded as “quantitative” simply because it featured a survey, or *vice versa*, then the analysis would certainly have been tautological. Yet, the following procedures ensured a reasonable degree of validity to the analysis. Firstly, the content analysis was based on stated methodologies, meaning that methodological contents were coded based on what authors indicated in the discussions of their designs and methods. Secondly, characteristics that were less evident, such as methodological paradigms, were coded and captured twice to ensure that my interpretations were as consistent as possible. Thirdly, contents were analysed before the typology was constructed. Thus, the explicit classifications in the typology could not have biased the coding. Moreover, many findings in Chapter 5 render some validity to the journal article survey, such as the emphasis on planning and design as objects of study, the predominance of pragmatism, metaresearch, case studies and evaluation research, and the relatively high scholarly impact of metaresearch as opposed to the relatively low impact of intervention research.

6.3 FINDINGS

Findings are presented in terms of (1) a review of existing typologies, (2) the construction of the typology, and (3) the testing of the typology.

6.3.1 Review of existing typologies

Contrary to methodology textbooks in the built environment field, most textbooks in the social sciences discuss the notion of “research design” while some also identify prototypical designs. Yet, as shown in Chapter 4, due to particular classification criteria, most textbooks distinguish between three designs at most, with occasional classifications

of subtypes. Moreover, few textbooks represent such designs by means of diagrammatic typologies, while the research problem of this study was actually to find a way of representing designs.

Instead, many textbooks simply classify designs along the quantitative-qualitative dichotomy. Yet, this dichotomy is about a methodological and not a logical distinction, while designs applicable to social research in the built environment are distinguished based on different logics. Therefore, as indicated in Chapter 4, this study takes a stance against an unequivocal classification of designs along such a dichotomy without considering other criteria. Just by virtue of the finding in Chapter 5 that the bulk of social research in the built environment field features a pragmatic instead of a post-positivist (quantitative) or interpretative (qualitative) paradigm, it should be clear by now that the quantitative-qualitative dichotomy is heuristically not optimal to represent designs for social research in the built environment. A few methodologists, however, have constructed typologies that are more sophisticated. This subsection reviews those typologies, and considers their applicability for representing designs for social research in the built environment.

Diagram 5 shows Mouton and Marais' "typology of research designs" (1996:122). This typology includes a classification of designs along three criteria, namely, (1) research strategies, i.e., whether to "generalise" or "contextualise" findings, (2) research goals (or what I term "research purposes"), and (3) collection of new data vs. analysis of existing data (which is synonymous to my term of "primary vs. secondary sources of data"). Blaikie (1993:131-200) uses the term "research strategies" to refer to different modes of reasoning, such as inductive and deductive strategies, and retroductive and abductive strategies, which is somehow similar to Mouton and Marais' notion of research strategies as a focus on contextual vs. general interests. However, this use of the term "research strategies" is possibly confusing, since most methodologists nowadays appear to use the term in relation to quantitative vs. qualitative research (e.g., see Groat & Wang, 2002:10; Bryman & Teevan, 2005:46; Creswell, 2009:11-15).

Diagram 5: Mouton and Marais' "typology of research designs"

Research strategy	Research goal	Collection of new data	Analysis of existing data
GENERAL INTEREST	EXPLANATORY	EXPERIMENTAL and QUASI-EXPERIMENTAL DESIGNS (Emphasis on experimental control, structured direct & indirect observation)	
	DESCRIPTIVE	SURVEY DESIGNS (Emphasis on structured indirect observation, questionnaires & interviews)	(1) SECONDARY ANALYSIS – census data (2) QUANTITATIVE CONTENT ANALYSIS – newspaper reports, speeches, etc.
	EXPLORATORY	SURVEY DESIGNS (pilot studies)	
CONTEXTUAL INTEREST	EXPLANATORY (VERSTEHEN)		(1) QUALITATIVE CONTENT ANALYSIS or DISCOURSE / ASSERTION ANALYSIS (2) HISTORICAL ANALYSIS (What was the cause of 'x'?)
	DESCRIPTIVE	FIELD DESIGNS or ETHNOGRAPHIC DESIGNS (Emphasis on unstructured direct & indirect observation)	(1) QUALITATIVE CONTENT ANALYSIS or DISCOURSE ANALYSIS (2) HISTORICAL ANALYSIS (What happened?)
	EXPLORATORY	FIELD DESIGNS or ETHNOGRAPHIC DESIGNS (Emphasis on the use of informants, elite figures)	

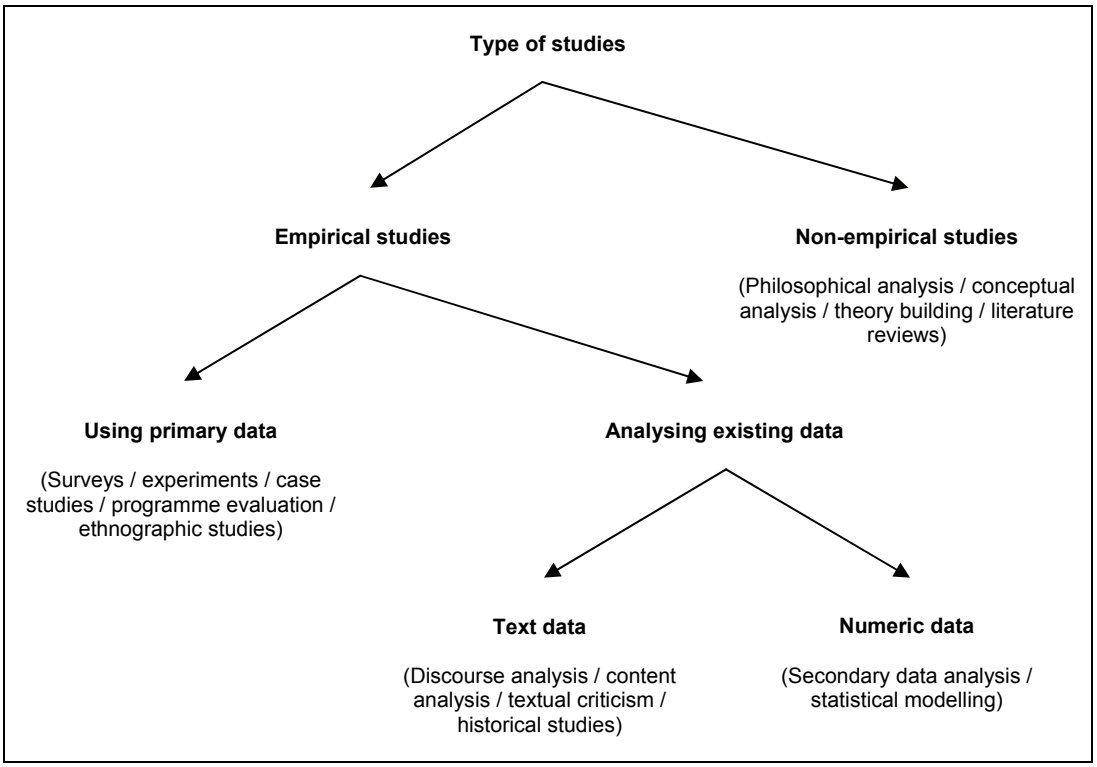
Source: Mouton and Marais (1996:122)

Even though Mouton and Marais' typology does not include the quantitative-qualitative dichotomy as a criterion, the "research strategy" criterion nevertheless results in a distinction between quantitative and qualitative designs, whereby "general interests" are associated exclusively with quantitative designs and "contextual interests" with qualitative designs. Thus, the quantitative-qualitative dichotomy might just as well have been included as a criterion. Probably the most important limitation of this typology, considering social research in the built environment, is that it excludes designs for applied research, such as intervention, evaluation and PAR, whereas these have been identified as applicable to social research in the built environment (see Chapter 4). Moreover, the

typology does not allow for nonempirical or metaresearch designs, which have also been identified as applicable.

Diagram 6 shows Babbie and Mouton's "classification of research design types" (2001:78). This typology, published subsequent to the previous one, also includes a classification of designs along three criteria, though somewhat different. It includes (1) empirical vs. nonempirical studies, (2) studies using primary data vs. analysing existing data (which, again, is synonymous to my term of "primary vs. secondary sources of data"), and studies based on secondary sources of data, which, in turn, are split along (3) studies using text vs. numeric data.

Diagram 6: Babbie and Mouton's "classification of research design types"



Source: Babbie and Mouton (2001:78)

Babbie and Mouton's typology includes "nonempirical studies", which is similar to my notion of "metaresearch". This inclusion is useful since it now allows for a distinction between empirical and nonempirical designs, thereby allowing for the inclusion of subtypes such as literature reviews, conceptual analysis, theory construction, etc. However, although this typology now includes designs otherwise left out in the previous one (including metaresearch and modelling etc.), the second-order split along studies

based on primary vs. existing data excludes designs based on hybrid sources of data – again the more pragmatic designs such as intervention, evaluation and PAR. Moreover, Babbie and Mouton's typology results in a single grouping of designs using primary data, whereas those designs, which include surveys, experiments, case studies, etc., have been distinguished from each other in Chapter 4 based on their unique core logics. Such varied designs should be distinguished more carefully so that researchers may decide more incisively between them.

In a presentation at the University of Stellenbosch – African Doctoral Academy Summer School, Mouton (2010) explained his more recent ideas about research design. Mouton first argues, similar to what I do in Chapter 3, that students should consider issues of design before issues of method, particularly regarding the overall logic of their projects. Mouton then identifies 10 prototypical designs, which are relatively similar to those identified in this study, including surveys, experiments, modelling studies, secondary data analysis, programme evaluation studies, case studies, ethnographic (field) studies, PAR, historical/narrative studies, and textual and discourse analysis.

Instead of representing these designs in a typology, Mouton uses a more flexible approach and proposes a simple matrix that researchers can use as a heuristic device to juxtapose any of the above designs against three sets of logics. This juxtaposition helps to clarify the overall logic of a study and identifies more specific design subtypes or specialised subtypes. The three sets of logics include (1) the logic of contextualisation vs. the logic of generalisation, (2) the logic of discovery vs. the logic of validation, and (3) the logic of diachronicity vs. the logic of synchronicity. The last set refers to the temporal aspect of a study, i.e., the study of a phenomenon at a given moment or over time.

For example, a survey evidently has the logic of generalisation, but to finetune this overall logic and the type of survey, a researcher should make two further logical decisions. The researcher should decide whether to use the logic of validation, in which case the researcher should consider an analytical survey, or the logic of discovery, in which case the researcher should consider an exploratory survey, such as a needs assessment survey. Following on, the researcher should decide whether to use the logic of diachronicity, in which case the researcher should consider a cross-sectional design, or the logic of synchronicity, in which case the researcher should consider a longitudinal design.

Mouton's "three logics" matrix is useful as far as a researcher can subject any study to it in order to determine the specific logic and type of design for the study. However, the matrix is not a typology that classifies designs, since it is a dynamic and not a static device. Moreover, Mouton's three sets of logics correspond with Bryman and Teevan's three considerations for research design (2005:24). These considerations include (1) "expressing causal connections between variables" (which corresponds with the logic of discovery vs. the logic of validation), (2) "having a temporal appreciation of social phenomena" (which corresponds with the logic of diachronicity vs. the logic of synchronicity), and (3) "understanding behaviour in its specific social context as opposed to generalising to larger groups of individuals" (which corresponds with the logic of contextualisation vs. the logic of generalisation). I subsequently discuss Bryman and Teevan's typology.

Diagram 7 shows Bryman and Teevan's "research strategy and research design" typology (2005:46). The difference between Bryman and Teevan's typology and those reviewed so far, is that theirs does not include criteria to classify designs in terms of concomitant methodological considerations. Instead, it lists four prototypical designs (experimental, cross-sectional, longitudinal, and case study), while showing quantitative and qualitative variants or "strategies" of each design. This configuration, however, does address each of their three considerations for design outlined above.

Considering that typologies should be mutually exclusive, Bryman and Teevan's typology presents a difficulty in that two of the "designs", namely "cross-sectional" and "longitudinal", actually pertain to a consideration applicable to any design. For example, experiments or case studies, or any other prototypical design for that matter, are necessarily either cross-sectional or longitudinal. Moreover, Bryman and Teevan's typology, like the others, excludes a number of designs applicable to social research in the built environment – again intervention, evaluation and PAR. However, Bryman and Teevan, like others mentioned in Chapter 4, perhaps see the latter rather as research types in which a researcher may use an experimental, cross-sectional, longitudinal, or case study design.

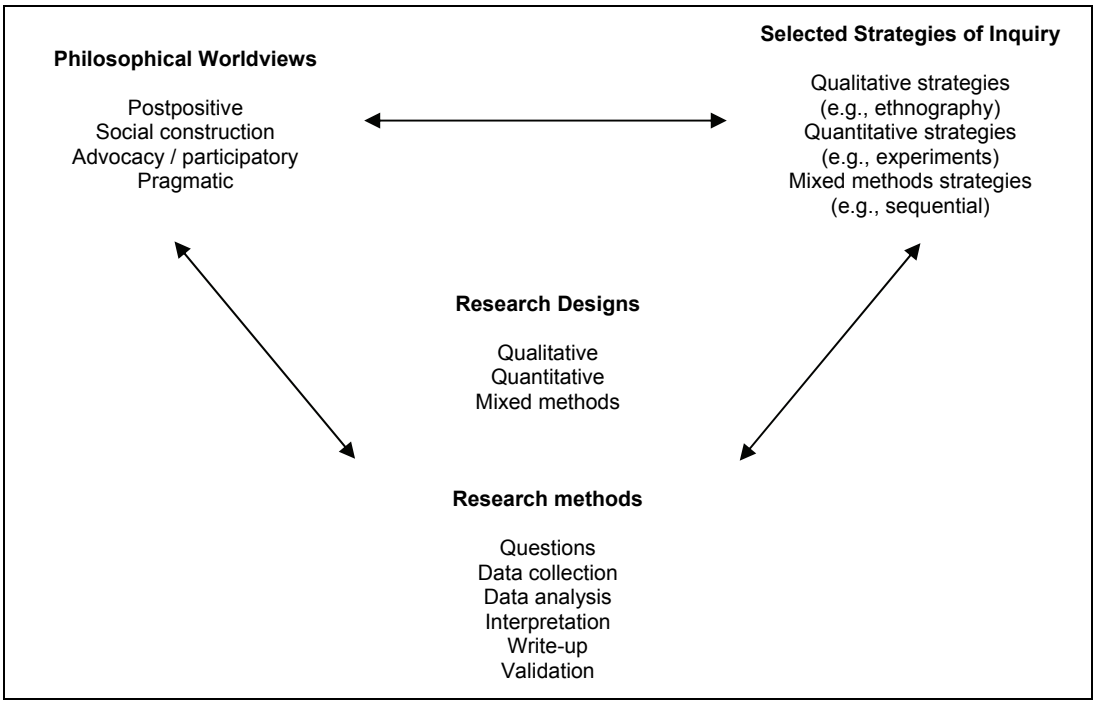
Diagram 7: Bryman and Teevan's "research strategy and research design"

Research design	Research strategy	
	Quantitative	**Qualitative**
Experimental	Most experimenters employ quantitative comparisons between experimental and control groups on the dependent variable	
Cross-sectional	Survey research or structured observation on a sample at a single point in time; content analysis on a sample of documents. Sometimes there is a comparison, as in cross-cultural research.	Qualitative interviews or focus groups at a single point in time; qualitative content analysis of a set of documents relating to a single period.
Longitudinal	Survey research on a sample on more than one occasion, as in panel and cohort studies; content analysis of documents relating to different time periods.	Ethnographic research over a long period, qualitative interviewing on more than one occasion, or qualitative content analysis of documents relating to different time periods. Such research is longitudinal when the main focus is to map change.
Case study	Survey research on a single case with a view to revealing important features about its nature.	The intensive study by qualitative interviewing of a single case, which may be an organization, life, family, or community.

Source: Bryman and Teevan (2005:46)

Diagram 8 shows Creswell's "framework for designs", which is the most recently published typology (2009:5). Creswell's typology differs from others' in that he presents the notion of "research design" in a framework. For Creswell, "research designs" are, and I agree, "plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis" (2009:3). Yet, unlike other typologies that classify prototypical designs, Creswell regards designs simply as either "qualitative", "quantitative", or "mixed-method", while what would otherwise be regarded as prototypical designs in this study are regarded as "strategies" in Creswell's typology. Thus, Creswell's typology refers to "quantitative strategies" (including survey and experimental research), "qualitative strategies" (including ethnography, grounded theory, case studies, phenomenological and narrative research), or "mixed-method strategies" (including sequential mixed-methods, concurrent mixed-methods and transformative mixed-methods) (2009:11-15).

Diagram 8: Creswell's "framework for designs"



Source: Creswell (2009:5)

Moreover, Creswell's typology does not make specific connections between "philosophical worldviews" (or what I term "methodological paradigms"), "strategies of inquiry" (or what I term "methodological approaches"), or research methods. Yet, this is probably intentional to suggest that these connections are not as straightforward. Instead, the typology depicts "research designs", or perhaps the act of designing research, as lying in the middle of iterations between methodological paradigms, approaches and research methods. Even though such a suggestion is reasonable, Creswell's typology is too vague about designs and their concomitant methodological considerations.

To conclude: four existing typologies were reviewed, each quite different in terms of classification and function. Two of them guide a researcher in choosing a design, which are those presented by Mouton and Marais, and Babbie and Mouton. One of them highlights variants of four prototypical designs, which is the one presented by Bryman and Teevan, while one loosely depicts considerations that are likely to influence research design, which is the one presented by Creswell.

All four typologies, however, are very generic classifications of designs intended for a wide readership in the social sciences. Thus, they are not customised for a readership in the built environment field. For example, they do not classify all 10 prototypical designs applicable to social research in the built environment. In most of them, it is not clear where intervention, evaluation, PAR and metaresearch fit. Moreover, it is sometimes not clear how designs classified in terms of a particular methodological consideration, e.g., "quantitative" vs. "qualitative" designs, are associated with other equally important considerations. The following subsection therefore constructs a typology of designs for social research in the built environment that will attempt to overcome the limitations of existing typologies by showing a comprehensive range of prototypical designs classified more explicitly in terms of various methodological considerations.

6.3.2 Constructing the typology

Chapter 1 defined "research design" as, amongst other things, involving strategic decisions about various methodological considerations across the dimensions of social research.[23] Chapter 2 then outlined the dimensions of social research as the (1) sociological, (2) teleological, (3) ontological, (4) epistemological, and (5) methodological dimensions, and identified the more important considerations for research design in each of them. Each consideration was also discussed how it may contribute towards a classification of designs.

6.3.2.1 Classification criteria

To recapitulate the considerations: In the sociological dimension, the key question is; who is the audience for the research, i.e., what is the context of the research? In the teleological dimension, the key question is; what are the aims and purposes of the research? In the ontological and epistemological dimensions, the key question is; what are the conceptions of reality and knowledge, practically speaking, what is the methodological paradigm? Finally, in the methodological dimension, the key question is; what methodological approach and sources of data should be used? Therefore, the more important considerations for classifying designs, generally speaking, include:

- Research context;
- Research aim;
- Research purpose;

23 As Bryman and Teevan indicate: "A choice of research design reflects decisions about the priority being given to a range of dimensions of the research process" (2005:24).

- Methodological paradigm;
- Methodological approach; and
- Source of data.

Given the discussion in Chapter 2 of these considerations and how they may classify designs, the identification of prototypical designs in Chapter 4 and verification of their applicability in Chapter 5, it is now possible to construct an initial typology.

6.3.2.2 An initial typology

Diagram 9 shows an initial typology of designs for social research in the built environment. I constructed the typology using a matrix that classifies the 10 prototypical designs in terms of the six considerations listed above. The right-hand column lists the 10 designs with their core logics to the left, while the remaining left-hand columns classify the designs in terms of their concomitant methodological considerations. Two of the considerations, namely "research context" and "research aim", were included in the same column since they are sufficiently similar in terms of their classification of designs.[24]

24 The context of research usually determines the aim of research. For example, the aim of basic research is usually theoretical – to improve our understanding, while the aim of applied research is usually practical – to solve problems. Hence, Fouché and De Vos write: "In this book we take the position stated by Arkava and Lane (1983), and Grinnell *et al*. (1993a:14-16), in that we see basic and applied research as broad goals [aims] of research" (2005a:105).

Diagram 9: An initial typology of designs for social research in the built environment

Methodological considerations						Research designs
Research context & Research aim	**Research purpose**	**Methodological paradigm**	**Methodological approach**	**Source of data**	**Core logic**	
Basic contexts Theoretical aims	Descriptive Explanatory	Post-positivist	Quantitative	Primary	Generalisation	**Surveys**
					Causal attribution	**Experiments**
				Secondary (numerical / spatial)	Prediction / Illustration	**Modelling, simulation, mapping and visualisation**
	Interpretative Exploratory Descriptive	Interpretative social science	Qualitative	Secondary (textual)	Interpretation (hermeneutical)	**Textual and narrative studies**
				Primary	Interpretation (ethnographical / phenomenological)	**Field studies**
					Contextualisation	**Case studies**
Applied contexts Practical aims	Formative Evaluative	Pragmatic	Mixed-method	Hybrid	Intervention	**Intervention research**
					Evaluation	**Evaluation research**
	Emancipatory	Critical social science	Participatory	Primary	Participation / Action	**PAR**
Basic contexts Meta-theoretical aims	Meta-analytical purposes	N/A (Nonempirical)	N/A (Nonempirical)	N/A (Nonempirical)	Various core logics	**Metaresearch**

Although the designs have already been distinguished from each other based on their unique core logics, the typology serves to reinforce some distinctions through the added considerations and horizontal lines. For example, while intervention and evaluation research remain similar in many respects, PAR, for example, is evidently quite different to other designs in most respects.

According to the typology, surveys is classified as “basic”, “theoretical”, “descriptive” (and to some extent “explanatory”), “post-positivist”, “quantitative”, and “primary” research. Similarly, intervention research is classified as “applied”, “practical”, “formative” (and to some extent “evaluative”), “pragmatic”, and “mixed-method” research using hybrid data. Thus, the typology may improve decision-making by helping a researcher to anticipate certain considerations upon choosing a design. Additional benefits of the typology are discussed in the summary and conclusion.

Since metaresearch is usually nonempirical, three of the considerations, including methodological paradigm, approach, and source of data, do not apply. Still, metaresearch is usually conducted within a basic context, with meta-theoretical aims and meta-analytical purposes, such as to critique existing research, develop new research directions, etc. Consequently, metaresearch has “various core logics” depending on a particular subtype, such as to “review” literature, “synthesise” research, “analyse” concepts, “construct” theories, “argue” normative positions, etc (see Chapter 4). An example of metaresearch in the built environment field is normative argumentation for and against New Urbanism and other schools of thought on sustainable development that have so far provided an agenda for empirical studies.

Chapter 3 identified an improper distinction between basic and applied research in thesis curricula and theses themselves. The typology now makes the distinction clearer by showing how basic and applied research is associated with different designs and methodological considerations.

Yet, how likely are the relationships depicted in the typology? Although it is accepted that not all surveys are necessarily associated with basic research, theoretical aims, descriptive purposes, etc., the question is, are *most* surveys necessarily associated with such considerations, as the typology suggests? Similarly, are *most* intervention studies necessarily associated with applied research, practical aims, formative purposes, etc? As indicated before, this is an initial typology. The following subsection therefore tests the typology.

6.3.3 Testing the typology

The typology was tested using data from the journal article survey. The relationships between the designs and methodological characteristics of articles were analysed to see the likelihood of the classifications of designs in terms of the six methodological considerations as depicted in the typology. Relationships were analysed between research designs[25] and (1) contexts, (2) aims, (3) purposes, (4) methodological paradigms, (5) methodological approaches, and (6) sources of data. The results served to revise the initial typology.

6.3.3.1 Research designs and contexts

Table 51 shows the relationship between research designs and contexts, i.e., basic vs. applied research.[26] Designs were grouped according to their classification by "research context" as depicted in the typology.

Table 51: Relationship between research designs and contexts

Research designs	Research contexts					
	Basic		Applied		Total	
	Count	%	Count	%	Count	%
Surveys; Experiments; Modelling etc.; Textual & narrative studies; Field studies; Case studies	103	54.8	85	45.2	188	100.0
Intervention research; Evaluation research	6	10.3	52	89.7	58	100.0
Total	**109**	**44.3**	**137**	**55.7**	**246**	**100.0**

Note: Data exclude all articles that featured PAR, metaresearch, or multiple designs.

Table 51 shows that a significantly larger percentage of surveys etc. (about 55%, as highlighted in the table), was indeed associated with basic research, while a significantly larger percentage of intervention and evaluation research (about 90%) was associated

25 PAR and metaresearch were excluded from the analysis. The number of articles that featured PAR was too low to warrant a valid analysis. As indicated earlier, metaresearch is usually nonempirical and not applicable to empirical considerations.

26 As indicated earlier, perceptual maps were used to illustrate relationships in contingency tables. However, perceptual maps are only presented for those tables in which both rows and columns included more than two categories. This is because SPSS requires perceptual maps to include at least two dimensions, which in turn requires a minimum number of three categories in any of the two variables. Perceptual maps are therefore not included for the first two tables, including this one.

with applied research (χ^2 (1, N = 246) = 35.479, p = .00).[27] Thus, the test confirms the classification of designs by "research context" as depicted in the typology. However, the relationship between research designs and contexts is, at best, moderate (C = .355). This is because a relatively large percentage of surveys, etc. (about 45%), was associated with applied research, which can be ascribed to the emphasis on problem solving in social research in the built environment (see also remarks about evaluation research in Chapter 4).

6.3.3.2 Research designs and aims

Table 52 shows the relationship between research designs and aims, i.e., theoretical vs. practical research. Designs were grouped according to their classification by "research aim" as depicted in the typology.

Table 52: Relationship between research designs and aims

Research designs	Research aims					
	Theoretical		Practical		Total	
	Count	%	Count	%	Count	%
Surveys; Experiments; Modelling etc.; Textual & narrative studies; Field studies; Case studies	73	81.1	17	18.9	90	100.0
Intervention research; Evaluation research	2	6.9	27	93.1	29	100.0
Total	**75**	**63.0**	**44**	**37.0**	**119**	**100.0**

Note: Data exclude all articles that featured PAR, metaresearch, or multiple designs and aims.

Table 52 shows that a significantly larger percentage of surveys etc. (about 81%), was indeed associated with theoretical research, while a significantly larger percentage of intervention and evaluation research (about 93%) was associated with practical research (χ^2 (1, N = 119) = 51.838, p = .00). Thus, the test confirms the classification of designs by "research aim" as depicted in the typology. Moreover, the relationship between research designs and aims is also moderate to reasonably strong (C = .551).

27 Thus, there is less than a 5% probability that this relationship between research designs and contexts in peer-reviewed and cited empirical social research articles in the built environment is due to chance factors.

6.3.3.3 Research designs and purposes

Table 53 shows the relationship between research designs and purposes, i.e., explanatory vs. exploratory/descriptive vs. formative/evaluative research. Designs were grouped according to their classification by "research purpose" as depicted in the typology.

Table 53: Relationship between research designs and purposes

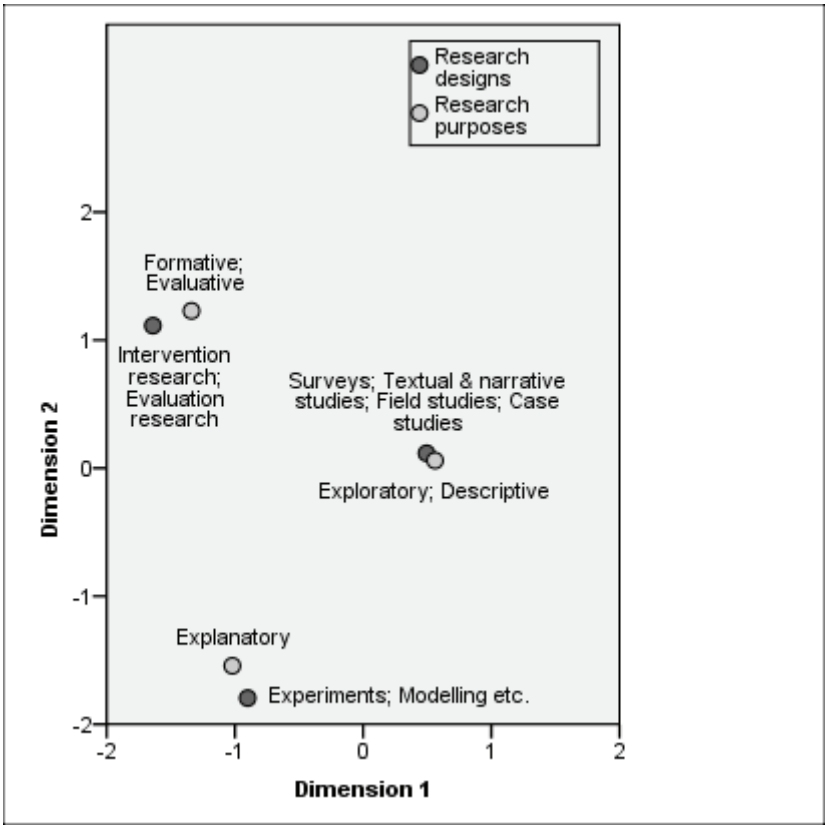
Research designs	Research purposes							
	Explanatory		Exploratory; Descriptive		Formative; Evaluative		Total	
	Count	%	Count	%	Count	%	Count	%
Experiments; Modelling, etc.	14	73.7	5	26.3	0	0.0	19	100.0
Surveys; Textual & narrative studies, Field studies; Case studies	5	5.0	88	87.1	8	7.9	101	100.0
Intervention research; Evaluation research	3	15.0	2	10.0	15	75.0	20	100.0
Total	**22**	**15.7**	**95**	**67.9**	**23**	**16.4**	**140**	**100.0**

Note: Data exclude all articles that featured PAR, metaresearch, or multiple designs and purposes.

Table 53 shows that a significantly larger percentage of experiments and modelling etc. (about 74%), was indeed associated with explanatory research. Moreover, a significantly larger percentage of surveys etc. (about 87%), was associated with exploratory and descriptive research, while a significantly larger percentage of intervention and evaluation research (75%) was associated with formative and evaluative research (χ^2 (4 N = 140) = 117.646, p = .00).[28] In fact, there were no experiments etc. that were associated with formative and evaluative research. Thus, the test confirms the classification of designs by "research purpose" as depicted in the typology. Moreover, the relationship between research designs and purposes is the strongest one so far (C = .676). Figure 1 shows a perceptual map of the relationship between research designs and purposes.

[28] Chi-square results may be invalid due to low counts in some cells.

Figure 1: Relationship between research designs and purposes



The map shows that the relationships between all three groups of designs and their concomitant purposes are indeed strong. In terms of Dimension 1, which accounts for 54% of inertia (a measure of variation in the data), formative, evaluative and explanatory purposes are located to the left and surveys and other qualitative designs to the right. This is indicative of the relative inapplicability of qualitative designs for purposes like intervention, evaluation and explanation. In terms of Dimension 2, which accounts for the remaining 46% of inertia, exploratory and descriptive purposes are located between intervention and evaluation research above and experiments and modelling, etc. below. This is indicative of the predominance of descriptive purposes in social research in the built environment. Experiments and modelling etc., lie on the outskirt of the map, suggesting they have very little in common with exploratory and descriptive research, and less so with formative and evaluative research.

6.3.3.4 Research designs and methodological paradigms

Table 54 shows the relationship between designs and methodological paradigms, i.e., post-positivist vs. interpretative vs. pragmatic. Designs were grouped according to their classification by "methodological paradigm" as depicted in the typology.

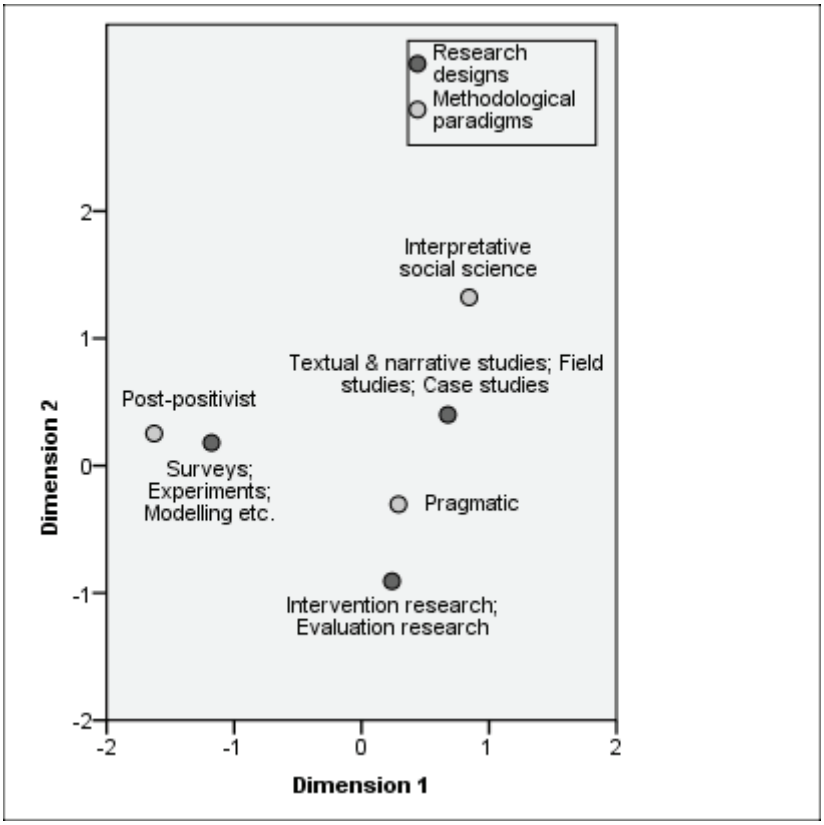
Table 54: Relationship between research designs and methodological paradigms

Research designs	Methodological paradigms							
	Post-positivist		Interpretative social science		Pragmatic		Total	
	Count	%	Count	%	Count	%	Count	%
Surveys; Experiments; Modelling, etc.	37	55.2	2	3.0	28	41.8	67	100.0
Textual & narrative studies, Field studies; Case studies	0	0.0	25	25.8	72	74.2	97	100.0
Intervention research; Evaluation research	4	7.1	0	0.0	52	92.9	56	100.0
Total	**41**	**18.6**	**27**	**12.3**	**152**	**69.1**	**220**	**100.0**

Note: Data exclude all articles that featured PAR (including critical social science), metaresearch, or multiple designs.

Table 54 shows that a significantly larger percentage of surveys etc. (about 55%), was indeed associated with post-positivism. However, a significantly larger percentage of textual and narrative studies etc. (about 74%), was associated with pragmatism and not interpretivism. A significantly larger percentage of intervention and evaluation research (about 93%), in turn, was associated with pragmatism (χ^2 (4 N = 220) = 108.336, p = .00). There were no textual and narrative studies etc. that were associated with post-positivism, and no intervention and evaluation studies associated with interpretivism. However, because a larger percentage of textual and narrative studies etc. was associated with pragmatism rather than interpretivism, the test only partly confirms the classification of designs by "methodological paradigm" as depicted in the typology. Yet, the relationship between designs and methodological paradigms is still moderate towards reasonably strong (C = .574). Figure 2 shows a perceptual map of the relationship between designs and methodological paradigms.

Figure 2: Relationship between research designs and methodological paradigms



The map shows that the relationships between all three groups of designs and their concomitant paradigms are less clear compared to the previous map, except maybe for surveys etc. Chapter 2 indeed indicated that methodological paradigms guide research design indirectly, and that coherence between paradigms, designs and methods is not a given in social research, let alone social research in the built environment.[29] In terms of Dimension 1, which accounts for 83% of inertia in the data, post-positivism and surveys are located to the left while other paradigms and designs are located to the right. This is indicative of a relatively exclusive relationship between post-positivism and quantitative designs in social research in the built environment. In terms of Dimension 2, which accounts for the remaining 17% of inertia, pragmatism is located between the quantitative

29

Neuman confirms by saying that:

> In practice, few social researchers agree with all parts of an approach [paradigm]. Often, they mix elements from each. Yet, these approaches [paradigms] represent fundamental differences in outlook and alternative assumptions about social science research. The approaches are different ways of looking at the world – ways to observe, measure, and understand social reality. . . . The linkage among the broad approaches to science, social theories, and research techniques is not strict.
>
> (2006:80-81)

and qualitative designs above and the mixed-method designs below, which is indicative of the predominance of pragmatism. In fact, the qualitative designs, although closer to interpretivism than the other two groups of designs, gravitate strongly towards pragmatism. Intervention and evaluation research lie on the outskirt of the map, suggesting they have very little in common with paradigms other than pragmatism.

6.3.3.5 Research designs and methodological approaches

Table 55 shows the relationship between designs and methodological approaches, i.e., quantitative vs. qualitative vs. mixed-method. Designs were grouped according to their classification by "methodological approach" as depicted in the typology.

Table 55: Relationship between research designs and methodological approaches

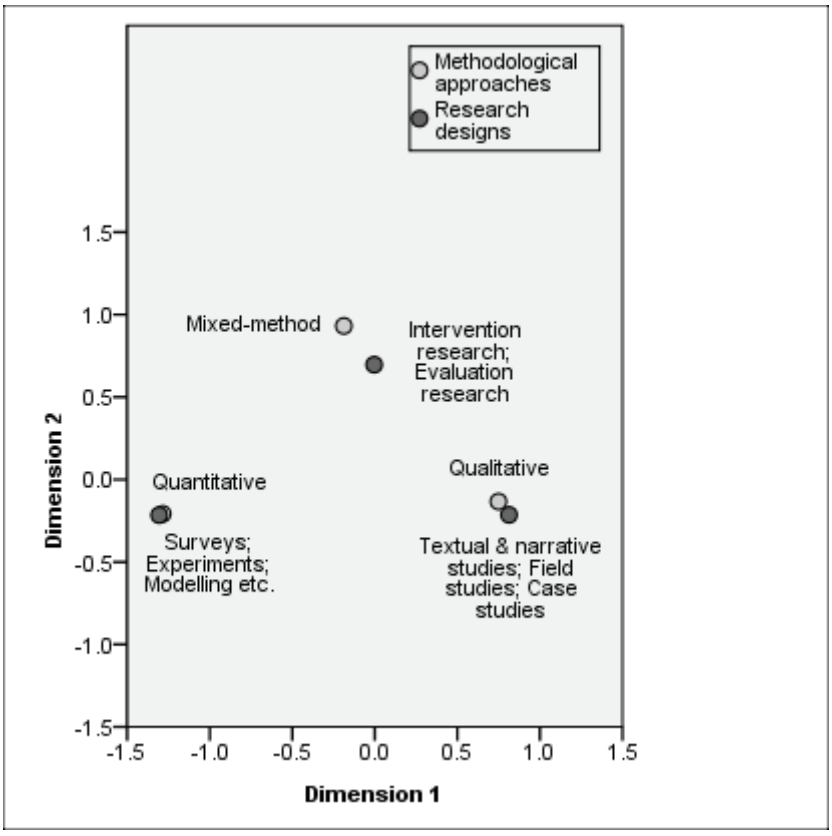
Research designs	Methodological approaches							
	Quantitative		Qualitative		Mixed-method		Total	
	Count	%	Count	%	Count	%	Count	%
Surveys; Experiments; Modelling, etc.	59	81.9	2	2.8	11	15.3	72	100.0
Textual & narrative studies, Field studies; Case studies	0	0.0	105	90.5	11	9.5	116	100.0
Intervention research; Evaluation research	15	25.9	29	50.0	14	24.1	58	100.0
Total	**74**	**30.1**	**136**	**55.3**	**36**	**14.6**	**246**	**100.0**

Note: Data exclude all articles that featured PAR, metaresearch, or multiple designs.

Table 55 shows that a significantly larger percentage of surveys etc. (about 82%), was indeed associated with quantitative research, while a significantly larger percentage of textual and narrative studies etc. (about 91%), was associated with qualitative research. However, a significantly larger percentage of intervention and evaluation research (50%) was associated with qualitative and not mixed-method research (χ^2 (4 N = 246) = 167.566, p = .00). There were no textual and narrative studies etc. that were associated with quantitative research. However, because a larger percentage of intervention and evaluation research was associated with a qualitative approach rather than a mixed-method one, the test only partly confirms the classification of designs by "methodological approach" as depicted in the typology. Yet, the relationship between designs and

methodological approaches remains reasonably strong (*C* = .637). Figure 3 shows a perceptual map of the relationship between designs and methodological approaches.

Figure 3: Relationship between research designs and methodological approaches



The map shows clear relationships between all three groups of designs and their concomitant approaches, except maybe for intervention and evaluation research, which gravitate towards a qualitative approach. Surveys etc. are almost synonymous with a quantitative approach. In terms of Dimension 1, which accounts for as much as 97% of inertia in the data, quantitative designs and approaches are located to the left while qualitative designs and approaches are located to the right. This is indicative of a relatively exclusive relationship between quantitative designs and approaches as well as qualitative designs and approaches in social research in the built environment. It may also be indicative of Goldstein and Carmin's notion of increased methodological "compaction" in planning scholarship as referred to in Chapter 5. Mixed-method research lies on the outskirt of the map, suggesting that the bulk of mixed-method research is associated with intervention and evaluation research, although the bulk of intervention and evaluation research is not necessarily associated with mixed-method research.

6.3.3.6 Research designs and sources of data

Table 56 shows the relationship between designs and sources of data, i.e., primary vs. secondary vs. hybrid. Designs were grouped according to their classification by "source of data" as depicted in the typology.

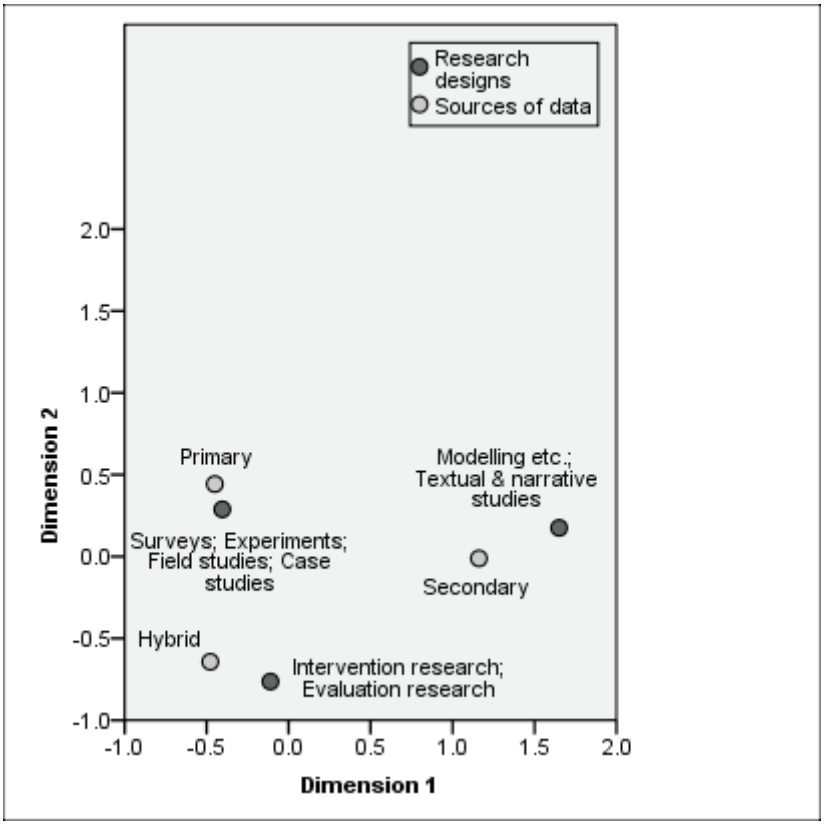
Table 56: Relationship between research designs and sources of data

Research designs	Sources of data							
	Primary		Secondary		Hybrid		Total	
	Count	%	Count	%	Count	%	Count	%
Surveys; Experiments; Field studies; Case studies	71	55.9	19	15.0	37	29.1	127	100.0
Modelling etc.; Textual & narrative studies	5	14.3	29	82.9	1	2.9	35	100.0
Intervention research; Evaluation research	17	30.4	14	25.0	25	44.6	56	100.0
Total	**93**	**42.7**	**62**	**28.4**	**63**	**28.9**	**218**	**100.0**

Note: Data exclude all articles that featured PAR, metaresearch, multiple designs, and articles from which it could not be determined what sources of data they featured. The latter equalled 36.

Table 56 shows that a significantly larger percentage of surveys etc. (about 56%), was indeed associated with primary data. Moreover, a significantly larger percentage of modelling etc. (about 83%), was associated with secondary data, while a significantly larger percentage of intervention and evaluation research (about 45%) was associated with hybrid data (χ^2 (4 N = 218) = 71.623, p = .00). Thus, the test confirms the classification of designs by "source of data" as depicted in the typology. However, the relationship between designs and sources of data is merely moderate (C = .497). Figure 4 shows the perceptual map of the relationship between designs and sources of data.

Figure 4: Relationship between research designs and sources of data



The map shows that the relationships between all three groups of designs and their concomitant sources of data are not that strong, except maybe for surveys etc., which are still located quite close to primary data. In terms of Dimension 1, which accounts for 87% of inertia in the data, hybrid data, which are actually associated with intervention and evaluation research, are located on the same side as surveys etc. In fact, Table 56 indicated that the bulk of studies with hybrid data was associated with surveys, experiments, field studies, and case studies. This suggests that designs such as field and case studies tend to use secondary data in addition to primary data, considering that qualitative research often involves thick descriptions of phenomena by triangulating sources of data. Modelling etc. and textual and narrative studies lie on the outskirt of the map, suggesting they have very little in common with sources of data other than secondary.

6.3.3.7 A revised typology

The previous subsections analysed the relationships between the designs and methodological characteristics of articles to see the likelihood of the classifications of designs in terms of the six methodological considerations as depicted in the typology.

The relationship between designs and research purposes proved the strongest (*C* = .676), followed by the relationship between designs and methodological approaches (*C* = .637), methodological paradigms (*C* = .574), research aims (*C* = .551), sources of data (*C* = .497), and research contexts (*C* = .355). The relationships between designs and all six considerations were confirmed, although two relationships were confirmed partly, namely the relationships between designs and methodological paradigms and approaches respectively. Considering these results, the initial typology is subsequently revised as per Diagram 10.

Diagram 10: A revised typology of designs for social research in the built environment

Methodological considerations						Research designs
Research context & Research aim	**Research purpose**	**Methodological paradigm**	**Methodological approach**	**Source of data**	**Core logic**	
Basic (towards applied) contexts Theoretical aims	Descriptive Explanatory	Post-positivist	Quantitative	Primary	Generalisation	**Surveys**
					Causal attribution	**Experiments**
				Secondary (numerical / spatial)	Prediction / Illustration	**Modelling, simulation, mapping and visualisation**
	Interpretative Exploratory Descriptive	Interpretative social science (towards pragmatic)	Qualitative	Secondary (textual)	Interpretation (hermeneutical)	**Textual and narrative studies**
				Primary (towards hybrid)	Interpretation (ethnographical / phenomenological)	**Field studies**
					Contextualisation	**Case studies**
Applied contexts Practical aims	Formative Evaluative	Pragmatic	Mixed-method (towards qualitative)	Hybrid	Intervention	**Intervention research**
					Evaluation	**Evaluation research**
	Emancipatory	Critical social science	Participatory	Primary	Participation / Action	**PAR**
Basic contexts Meta-theoretical aims	Meta-analytical purposes	N/A (Nonempirical)	N/A (Nonempirical)	N/A (Nonempirical)	Various core logics	**Metaresearch**

The revised typology keeps the structure of the initial typology, but with two sets of revisions. The first set of revisions pertains to the classification of designs. Because the tests revealed that a larger percentage of qualitative designs (i.e., textual and narrative studies, field studies and case studies), was associated with pragmatism rather than interpretivism, I now classify qualitative designs as “interpretative social science (towards pragmatic)” in terms of methodological paradigm (see Diagram 10). In this way, the typology is adjusted to reflect actual studies in the built environment field more accurately. However, I still classify them mainly as “interpretative social science”, since, in theory, they are associated with interpretivism more so than other designs. Similar analyses of articles in other journals may well reveal so. Similarly, because a larger percentage of intervention and evaluation research was associated with a qualitative approach rather than a mixed-method one, I now classify intervention and evaluation research as “mixed-method (towards qualitative)” in terms of methodological approach.

In addition, because a larger number of applied studies featured designs associated with basic rather than applied research (see Table 51), I now classify designs ranging from surveys to case studies as “basic (towards applied) contexts” in terms of research context. Similarly, because a larger number of studies with hybrid sources of data featured designs associated with primary sources of data (see Table 56), I now classify field and case studies as “primary (towards hybrid)” in terms of source of data. This revised classification, however, does not pertain to surveys and experiments, simply because of the unlikelihood of these two designs using hybrid sources of data.

The second set of revisions pertains to the horizontal lines that are now dashed instead of solid. All the tables above showed studies abound that featured designs and methodological characteristics not necessarily congruent with each other. In fact, there were very few cells in tables showing zero studies with designs and unrelated methodological characteristics. Thus, there are various alternative scenarios other than the norm in designing social research in the built environment. For this reason, the horizontal lines are dashed to suggest that categories are permeable and not necessarily watertight. Chapter 1 indeed indicated that categories in social science typologies tend to be permeable (see also De Vos, 2005a:35).

Nevertheless, the typology is reasonably exhaustive (by virtue of the fact that all prototypical designs applicable to social research in the built environment are included), and mutually exclusive (by virtue of the fact that designs are distinguished based on unique core logics over and above other methodological considerations).

Table 57 provides examples of studies from the journal article survey with “ideal-typical designs”, i.e., designs that conform to all their respective classifications in the typology. An example is provided for each of the 10 prototypical designs based on the article with the highest citation. In other words, Table 57 provides the title and abstract of the study with the highest citation featuring a survey that was associated with “basic”, “theoretical”, “descriptive”, “post-positivist”, “quantitative”, and “primary” research. Similarly, it provides the title and abstract of the study with the highest citation featuring intervention research that was associated with “applied”, “practical”, “formative”, “pragmatic” and “mixed-method” research using hybrid data. In addition, the table specifies the research design subtype in brackets where applicable.

Table 57: Examples of studies with ideal-typical designs (Continued on next page)

A survey **(Cross-sectional)**	BONDING AND BRIDGING: UNDERSTANDING THE RELATIONSHIP BETWEEN SOCIAL CAPITAL AND CIVIC ACTION[30] This study investigates the relationship between social connections and collective civic action. Measuring social capital in eight Phoenix, Arizona, neighborhoods allowed the authors to determine that individuals with strong social bonding (i.e., association and trust among neighbors) are more likely to take civic action. However, while social capital lessens the relationship between an individual's social status and the likelihood of taking action, it does not eliminate the positive relationship. The analysis also suggests that bonding and bridging are distinct forms of social capital that have some different antecedents.
An experiment **(Quasi)**	PEDESTRIAN ENVIRONMENTS AND SENSE OF COMMUNITY[31] A common claim made by New Urbanists is that a high-quality pedestrian environment will enhance sense of community by increasing opportunities for interaction among neighbors. This link between neighborhood design and community sentiment, however, has not been adequately researched. This study explores how objective and subjective qualities of the pedestrian environment influence residents' sense of community, both directly and indirectly through their effects on pedestrian travel. Surveys conducted in one pedestrian-oriented neighborhood and one automobile-oriented neighborhood in Portland, Oregon, support the hypotheses that (1) sense of community will be greater in the traditional neighborhood and (2) pedestrian environment factors will significantly influence sense of community, controlling for various demographic influences.
A modelling study	TRANSPORTATION AS A STIMULUS OF WELFARE-TO-WORK: PRIVATE VERSUS PUBLIC MOBILITY[32] Using a rich panel of data on welfare recipients in Alameda County, California, this article examines the importance of transportation policy variables in explaining the ability of some individuals to find gainful employment. A multinomial logit model predicts the probability that someone found a job as a function of car ownership, transit service quality, regional job accessibility by different transportation modes, human-capital factors, and various control variables. Results show that car ownership and educational attainment significantly increased the odds that someone switched from welfare to work, while transit service quality variables were largely insignificant. Nor was regional accessibility important in explaining employment outcomes, a finding that casts doubt on the spatial mismatch hypothesis. Concentration of housing near bus and rail routes appeared most important in stimulating employment. However, improved auto mobility had far stronger effects on employment outcomes than improvements in transit mobility.

30 Larsen, L., Harlan, S.L., Bolin, B., Hackett, E.J., Hope, D., Kirby, A., Nelson, A., Rex, T.R. & Wolf, S. 2004. Bonding and bridging: Understanding the relationship between social capital and civic action. *Journal of Planning Education and Research*, 24(1): 64-77.

31 Lund, H. 2002. Pedestrian environments and sense of community. *Journal of Planning Education and Research*, 21(3): 301-312.

32 Cervero, R., Sandoval, O. & Landis, J. 2002. Transportation as a stimulus of welfare-to-work: Private versus public mobility. *Journal of Planning Education and Research*, 22(1): 50-63.

Table 57: Examples of studies with ideal-typical designs (Continued from previous page; Continued on next page)

A textual study **(Content/textual analysis)**	MEMORY, DEMOCRACY AND URBAN SPACE: BANGKOK'S 'PATH OF DEMOCRACY'[33] Since the 1960s a particular string of urban spaces through central Bangkok have become appropriated by the democracy movement. This path extends from a sacred bo tree at Thamassat University through the 'royal ground' of Sanam Luang and along the 'royal road' of Ratchadamnoen Klang Avenue to the Democracy Monument - a paradoxical relic of 1930s' dictatorship which has been reappropriated. This stretch of urban space has been (and remains) the site of complex practices of resistance and violence, liberation and repression. This paper is about struggles over meaning and memory in urban space in a cultural context where the meanings and names of public places are highly fluid. Urban design constructs 'master narratives' which at once legitimate authority yet become available for reappropriation and semantic inversion.
A field study **(Ethnography)**	WIT, STYLE, AND SUBSTANCE: HOW PLANNERS SHAPE PUBLIC PARTICIPATION[34] This article compares the participatory methods and attitudes of four very different planners for whom public participation is central to practice. The comparison is based on Lefebvre's theory of the production of space and so emphasizes the decisiveness of material outcomes in gauging the depth and effectiveness of participatory processes. The featured planners are public art experts, which lends the study an air of freedom of expression while remaining well within the planning realms of central area enhancement, community development, and professional commitment to realizing the public interest.
A case study **(Single)**	MOBILITY STRATEGIES AND FOOD SHOPPING FOR LOW-INCOME FAMILIES: A CASE STUDY[35] This article focuses on the relationship between the mobility constraints that low-income families face in their acquisition of food and the coping strategies they develop for this routine task. The motivations and rationale behind travel and provisioning choices of the working poor and the resources available to them are examined by means of a series of semi-structured interviews conducted with members of twenty-six low-income households residing in the Austin, Texas, area. The ways that these households cope with their mobility and economic disadvantage are complex, logical, and varied; depend on their resources and circumstances; and must be flexible to deal with day-to-day occurrences. Evidence from this study shows that the flexibility afforded by the automobile widens the spatial and temporal aspects of mobility, allowing for a more extensive search for goods and services. The automobile is an important mode for non-work travel, even among those households that do not own one. However, the transit and walking remain critical in providing the mobility needed to access food-shopping destinations for these families.

33 Dovey, K. 2001. Memory, democracy and urban space: Bangkok's 'path of democracy'. *Journal of Urban Design*, 6(3): 265-282.

34 Carp, J. 2004. Wit, style, and substance: How planners shape public participation. *Journal of Planning Education and Research*, 23(3): 242-254.

35 Clifton, K.J. 2004. Mobility strategies and food shopping for low-income families: A case study. *Journal of Planning Education and Research*, 23(4): 402-413.

Table 57: Examples of studies with ideal-typical designs (Continued from previous page; Continued on next page)

An intervention study **(Site analysis and assessment)**	THE BLUE LINE BLUES: WHY THE VISION OF TRANSIT VILLAGE MAY NOT MATERIALIZE DESPITE IMPRESSIVE GROWTH IN TRANSIT RIDERSHIP[36] The paper examines the Blue Line corridor, a 22-mile rail transportation route that connects downtown Los Angeles to downtown Long Beach. The line passes through some of the most neglected and poorest communities in Los Angeles County. Despite initial rhetoric by rail advocates and local politicians the line has not succeeded in improving the economic environment of adjacent communities. In this paper we use the Blue Line as a case-study in an effort to understand the real and perceived barriers to growth around inner city station areas. Based on information gathered through a series of interviews with politicians, planners, community leaders and transportation experts, and site analysis data from extensive field-work, we identify the 'missing antecedents' for neighbourhood development around inner city station areas.
An evaluation study **(Implementation evaluation/Programme monitoring)**	THE MAIN STREET APPROACH TO DOWNTOWN DEVELOPMENT: AN EXAMINATION OF THE FOUR-POINT PROGRAM[37] Despite its widespread use as a downtown strategy, little research has been conducted on the Main Street Approach established by the National Trust for Historic Preservation. Through the use of a national survey of Main Street programs and site visits to four downtowns (Tupelo, Mississippi; Danville, Kentucky: Cushing, Oklahoma: and St. Charles, Illinois), this article reports on how communities actually, apply, the elements of the four-point Main Street Approach - organization, promotion, design, and economic restructuring - and discusses factors contributing to their usage and effectiveness. The article concludes with a discussion of the relevance of the Main Street Approach to members of the planning and design professions.
A PAR study	BRIDGING THE GAP BETWEEN TECHNICAL AND LOCAL KNOWLEDGE: TOOLS FOR PROMOTING COMMUNITY-BASED PLANNING AND DESIGN[38] Planners and designers have recently shown a renewed interest in community-based planning. Planning theorists have developed new paradigms arguing that they are not technical analysts but, instead, communicators who generate plans through give-and-take dialogues with the public (Innes, 1998). This paper describes several visual communication tools - including an image-based Geographic Information System (GIS), an artist, a scale model, and paper maps - that were used during participatory planning in Chicago's Pilsen neighborhood. Building on the seminal work of Kevin Lynch in The Image of the City, the "expert" team at the University of Illinois constructed an image-based GIS that provided visualization of the neighborhood context. The GIS images also functioned as a starting point for developing visions for the neighborhood. The artist used these images as a basis to develop sketches that gradually revealed participants' visions. The paper closes by evaluating the employed visualization tools, discussing pros and cons of using GIS, and suggesting ways to reduce communication gaps between design professionals and community residents.

36 Loukaitou-Sideris, A. & Banerjee, T. 2000. The Blue Line blues: Why the vision of transit village may not materialize despite impressive growth in transit ridership. *Journal of Urban Design*, 5(2): 101-125.

37 Robertson, K.A. 2004. The main street approach to downtown development: An examination of the four-point program. *Journal of Architectural and Planning Research*, 21(1): 55-73.

38 Al-Kodmany, K. 2001. Bridging the gap between technical and local knowledge: Tools for promoting community-based planning and design. *Journal of Architectural and Planning Research*, 18(2): 110-130.

Table 57: Examples of studies with ideal-typical designs (Continued from previous page)

A metaresearch study **(Normative argumentation)**	NETWORK POWER IN COLLABORATIVE PLANNING[39] This article makes a case that collaborative planning is becoming more important because it can result in network power. Collaborative policy processes are increasingly in use as ways of achieving results in an era distinguished by rapid change, social and political fragmentation, rapid high volume information flow, global interdependence, and conflicting values. Network power can be thought of as a flow of power in which participants all share. It comes into being most effectively when three conditions govern the relationship of agents in a collaborative network: diversity, interdependence, and authentic dialogue (DIAD). Like a complex adaptive system, the DIAD network as a whole is more capable of learning and adaptation in the face of fragmentation and rapid change than a set of disconnected agents. Planners have many roles in such networks, and planning education needs to incorporate new subject matter to better prepare planners for these roles.

6.4 SUMMARY AND CONCLUSION

The objective of this chapter was to construct and test a typology of designs for social research in the built environment. The more specific objectives were to (1) review existing typologies, (2) construct the typology, and (3) test the typology to see how well it classified the designs of actual studies.

Four existing typologies in the social sciences were reviewed, but were found to be inappropriate to classify designs for social research in the built environment. Existing typologies did not classify all 10 prototypical designs, neither was it clear how designs classified in terms of particular methodological considerations were associated with other equally important considerations. It was therefore important to construct a typology that could overcome the limitations of existing typologies by showing a comprehensive range of designs classified more explicitly in terms of various methodological considerations.

Six methodological considerations across the dimensions of social research were identified as classification criteria, including (1) research context, (2) research aim, (3) research purpose, (4) methodological paradigm, (5) methodological approach, and (6) source of data. An initial typology was constructed in a matrix that classified designs in terms of these considerations. The typology was then tested using data from the journal article survey. The relationships between the designs and methodological characteristics of articles were analysed to see the likelihood of the classifications depicted in the typology. The tests confirmed the classifications in terms of all six considerations. However, two classifications were only partly confirmed, while the tests revealed various

39 Booher, D.E. & Innes, J.E. Network power in collaborative planning. *Journal of Planning Education and Research*, 21(3): 221-236.

other associations, albeit as exceptions mostly, between the designs and methodological characteristics of articles. The typology was then revised based on these results. Thus, the contribution of the chapter foremost consisted in the presentation and substantiation of a typology of designs for social research in the built environment.

Some conclusions are made regarding the potential benefits and shortcomings of the typology. The typology has four potential benefits, namely (1) greater clarification, (2) improved teaching, (3) improved decision-making, and (4) methodological reflection.

The typology provides **greater clarification** in terms of what constitutes (1) a research *design*, (2) *applicable* designs, and (3) appropriate names for different designs. These clarifications, together with the typology's terminology, help to establish a more articulate and coherent methodological language for the built environment field. For example, the typology clarifies the difference between "methodological paradigms" and "methodological approaches", as well as what their respective types are. Built environment researchers currently often use these and other terms incorrectly or inconsistently.

In terms of **improved teaching**, the typology may provide a basis for a future methodology textbook in the built environment field. Alternatively, lecturers may use the typology directly as a pedagogical tool to introduce students to prototypical designs and their associated methodological considerations, bearing in mind that students can read the typology in conjunction with the outline presented in Chapter 4 that shows each design's subtypes, specialised subtypes and areas of application in built environment research and practice. Using it as an interpretative map, students can find their way around some of the more important considerations when designing research, and compare and discuss the basics of different designs with greater confidence.

Chapter 1 argued that, although researchers often make compromises, there must be at least some coherence between a project's design and its more important methodological characteristics. Since the typology (1) shows applicable designs, (2) outlines them in terms of their subtypes, specialised subtypes, and areas of application in built environment research and practice (as per Chapter 4), and (3) classifies them in terms of important methodological considerations, it may contribute towards more considered and appropriate **decision-making**. This may in turn contribute towards greater coherence between a project's design and methodological characteristics to maximise the validity of findings.

Finally, the typology provides a frame of reference for **methodological reflection**. It helps methodologists to compare prototypical designs and to re-examine their concomitant methodological considerations. This is particularly important for the advancement of research methodology in the built environment field considering its underdeveloped state. Alternatively, methodologists and researchers alike can use it as a guide to review the methodologies of proposed and completed studies.

However, the typology also has possible shortcomings, as all typologies do. Firstly, it includes only the more important considerations across the dimensions of social research that proved useful for classifying designs. The typology may therefore give novice researchers the impression that the six methodological considerations are necessarily the only ones when choosing a design or designing a study. Understandably, there are numerous other considerations depending on circumstances. For example, the sociological dimension alone includes decisions around epistemic cultures, research teams and networks, organisational interests and agendas, Mode 1 vs. Mode 2 research, etc. Thus, it is acknowledged that there are other considerations that may surface during the design of an actual study. Still, the possibility of other considerations does not suggest new or additional designs, just more careful decision-making, compromises, combinations, etc.

Secondly, the typology may also give the impression that the classifications of designs are necessarily fixed, whereas tests showed that the methodologies of actual studies are often messier or more complicated than what the typology suggests. Nevertheless, the tests substantiated those classifications as the norm, while the typology was revised with dashed lines between categories to suggest that alternative scenarios are indeed possible. Still, explicit classifications remain important to ensure *some* coherence between a project's design and its more important methodological characteristics whilst allowing for variation. Groat and Wang also indicated that:

> There should be coherence and consistency among these characteristics within any given research study. But on the other hand, when a researcher adopts a particular system of inquiry [methodological paradigm], that decision does not automatically determine either the strategy or the tactics for the study. Rather, a variety of both strategies and tactics can be orchestrated in ways consistent with the chosen paradigm.
>
> (2002:31)

Thirdly, although the typology stands on theoretical and empirical grounds, intended users such as students, lecturers, practitioners, research managers, etc., have yet to review it. The typology therefore still needs to be disseminated through various platforms, including lecturers, seminars, conferences, publications, etc.

Chapter 7 Conclusion

7.1 SUMMARY OF MAIN FINDINGS AND CONTRIBUTIONS

In this subsection, I briefly summarise the main findings of the study and contributions towards research methodology in the built environment field.

7.1.1 Main findings

The research problem was based on two premises. Firstly, it was stated that built environment disciplines are primarily applied sciences focusing on the application more so than generation of knowledge, and are consequently less concerned with research methodology. Secondly, owing to this disinterestedness in research methodology, built environment disciplines have never really developed their own methodology, and instead borrow designs and methods from other fields, especially the social sciences. However, instead of developing a unique methodology for built environment disciplines, the problem was to find a way of representing existing designs in a manner that makes more sense for researchers given the characteristics of social research in the built environment. Thus, the object of study was “research designs”, while this was a metamethodological study located in the built environment field, i.e., architecture, urban design and planning.

The aim of the study was to construct a typology of designs for social research in the built environment that would show a comprehensive range of prototypical designs and classify them in terms of important methodological considerations. The objectives of the study were to (1) outline the dimensions of social research, (2) explore methodological issues in social research in the built environment, (3) identify designs applicable to social research in the built environment, (4) determine designs used in social research in the built environment, and then to (5) construct and test the typology.

Chapter 2 outlined and discussed the dimensions of social research, including the sociological, teleological, ontological, epistemological and methodological dimensions. A number of methodological considerations were identified and discussed in each of these dimensions as possible classification criteria for designs. In addition, the five-dimensional framework served as a theoretical lens through which to conduct subsequent methodological analyses.

Chapter 3 explored methodological issues in social research in the built environment through exploratory interviews and a survey and methodological content analysis of built environment theses in South Africa. Interviewees expressed concern over the lack of methodological rigour and reflection in built environment research in general, yet opted for a pragmatic approach towards methods provided they are used correctly. The latter finding was interpreted as an expressed need for a typology of designs customised for the built environment field. In terms of the thesis survey, thesis curricula, however, were found to lean towards applied research despite theses being conducted in the context of academia. As expected, many theses were found to provide solutions for practice, but failed to engage with a theoretical knowledge base. Moreover, many students failed to explicate their research designs properly, while theses were increasingly limited to qualitative approaches. However, theses did show some coherence between methodological paradigms and approaches.

Given this insight into some of the difficulties faced by social researchers in the built environment field, the remaining chapters systematically set out to construct the typology. Chapter 4 identified designs applicable to social research in the built environment through a systematic review of methodology textbooks in this field. Although texts fail to establish the notion of "research design" properly, whilst differing in their identification and discussion of designs, it was possible to synthesise them and index 25 research design subtypes. These 25 subtypes were clustered into 10 prototypical designs with unique core logics. They included: (1) surveys, (2) experiments, (3) modelling, simulation, mapping and visualisation, (4) textual and narrative studies, (5) field studies, (6) case studies, (7) intervention research, (8) evaluation research, (9) PAR and (10) metaresearch. This is perhaps one of the more important findings – greater clarity about *what* constitutes a "research design", as well as *applicable* designs for social research in the built environment. In addition, the 10 designs were outlined in terms of their subtypes, specialised subtypes, and areas of application in built environment research and practice.

Chapter 5 determined the extent to which actual studies used the 10 designs and their 25 subtypes through a sample survey and methodological content analysis of peer-reviewed and cited social research articles in the built environment field. Indeed, all of the 10 designs were used, especially metaresearch, case studies, evaluation research and surveys, while the remaining designs featured less so. Nevertheless, all of the 25 subtypes are also used leading to the conclusion that there is a reasonable fit between the index of designs and designs used in actual studies. Moreover, all designs featured in

articles that had some scholarly impact in terms of citations, with metaresearch articles having had the most impact, while intervention research articles having had the least.

Chapter 6 constructed and tested the typology. Existing typologies were first reviewed and found inadequate to classify all 10 applicable designs. Classification criteria for the construction of a new typology were then identified by revisiting the five-dimensional framework developed in Chapter 2. The more important methodological considerations across the five dimensions in terms of research design were identified as classification criteria. They included: (1) research context, (2) research aim, (3) research purpose, (4) methodological paradigm, (5) methodological approach, and (6) source of data. An initial typology was constructed that classified designs in terms of these criteria. The typology was then tested to see how well it classified designs featured in actual studies. The relationships between the designs and methodological characteristics of surveyed articles were tested to see whether they were similar to the classifications depicted in the typology. The tests confirmed all six classifications as the norm, although two were partly confirmed. Yet, the tests also revealed complexity and alternative scenarios with regard to how actual studies were designed. The typology was therefore subsequently revised to account for some of the more pertinent complexities and scenarios. Four possible benefits of the typology were discussed, including (1) greater clarification, (2) improved teaching, (3) improved decision-making, and (4) methodological reflection. In addition, it was acknowledged that the typology could give the impression that the six considerations along which designs are classified are necessarily the only ones when choosing a design or designing a study and that the classifications are necessarily fixed.

7.1.2 Contributions

The typology itself is probably the most important contribution of the study. Apart from the benefits mentioned above, the typology may support lecturers, students, supervisors, researchers, peer-reviewers, practitioners, etc., to have a more articulate, reflexive and critical orientation with regard to research design in order to maximise the validity of findings and advance theory, methodology and practice in built environment disciplines.

Apart from the typology, the study also contributes to our understanding of the state of research methodology in the built environment field and of research design in particular. Research methodology in the built environment field is in an underdeveloped state, lacking in textbooks, dedicated journals, and a coherent methodological language. While the typology provides a platform for a future text, the systematic clarification and standardisation of methodological concepts and terms in the typology contribute towards

establishing a more coherent methodological language. The study revealed the equal importance of basic and applied research, as well as the predominance of pragmatism and qualitative approaches in current social research in the built environment.

In addition, the study is the first of its kind in the built environment field, and thus serves as an example of how a metamethodological study can be conducted in this field. In particular, it provides a carefully constructed and piloted data-capturing instrument for analysing the methodological content of theses or journal articles.

7.2 IMPLICATIONS OF THE TYPOLOGY

Although some of the potential benefits of the typology have been discussed, the question remains; what does it mean to have a typology of designs for social research in the built environment?

Globalisation, urbanisation, and concerns over economic, environmental and social sustainability, etc., are likely to sustain a future need for social research in the built environment. This research should no doubt focus on both expanding our knowledge base and addressing pressing problems. Thus, it is necessary to continue developing the discipline of research methodology in the built environment field, while the typology of designs provides a platform for doing so.

Yet, postmodernism casts doubt over social research, in particular the empirical orientation, method, and rationality thereof (Alvesson, 2002:2-9). It questions the extent to which social research can accurately represent social reality, if at all, and favours a focus on text, language, discourse and a conception of social reality as made up of actors and professional networks. Although postmodernism raises critical questions, it does not provide an alternative to social research, or an alternative paradigm for doing social research. Instead, it currently constitutes a particular stance towards social research with preference for particular themes and methods. Thus, postmodernism is essentially a critique of the validity of certain forms of social research, especially those with strong ontological and epistemological foundations in positivism or interpretivism. However, considering the conception of “research design” in this study as a logical plan for maximising the validity of findings, and the benefit of the typology to enable a more articulate, reflexive and critical orientation to designing research, the typology may actually serve to mitigate post-modern criticisms by enabling researchers to at least maximise the *contextual* validity of their findings. In fact, the typology allows for different forms of research, including post-modern.

7.3 DIRECTIONS FOR FURTHER RESEARCH

As indicated in Chapter 6, although the typology stands on theoretical and empirical grounds, intended users such as students, lecturers, practitioners, research managers, etc., have yet to review it. Further research is therefore needed with regard to how intended users will respond to the typology. This may include research on using it as a pedagogical tool, or as an interpretive map of designs to inform decision-making and research evaluation and management.

The data in Chapters 5 and 6 raise various questions about researchers' decision-making processes. To what extent are the designs and research characteristics of articles, as well as the relationships between them, a reflection of logical associations or conscious decisions on behalf of researchers? How aware are researchers of different paradigms and their concomitant methodological considerations? What are the key factors causing researchers to choose specific designs and methods? These questions may provide directions for further research beyond methodological concerns, to include concerns over the behavioural and institutional aspects of conducting social research in the built environment.

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Appendices

APPENDIX 1: LIST OF INTERVIEWEES

Interviewee	Capacity (At time of interview)	Affiliation (At time of interview)
Clair Benit	Researcher	HSRC Urban, Rural and Economic Development Research Programme
Dirk Conradi	Researcher	CSIR Built Environment
Louisa Duncker	Researcher	CSIR Built Environment
Chrisna du Plessis	Researcher	CSIR Built Environment
Bent Flyvbjerg	Professor; Research Director	Department of Development and Planning – Aalborg University, Denmark
Manie Geyer	Professor	Department of Town and Regional Planning – University of the North West
Johan Jacobs	Dean of research	University of KwaZulu Natal
Toni Lamont	Independent researcher	N/A
Karina Landman	Researcher	CSIR Built Environment
Peter Robinson	Professor	School of Architecture, Planning and Housing – University of KwaZulu Natal
Chris Rust	Research manager	CSIR Built Environment
Carel Schoeman	Professor	Department of Town and Regional Planning – University of the North West
Leon van Schaik	Innovation professor of architecture	Royal Melbourne Institute of Technology, Australia

APPENDIX 2: LIST OF SURVEYED THESES

#	Title	University	Year
1	`n Ondersoek na Sunnyside as gebied van hoëdigtheidsbehuising	North West	1975
2	A model for the integration of the low-income housing group into Centurion	North West	2000
3	Beplanningsriglyne vir lugmagbasisse in Suid Afrika	North West	2000
4	Die aanwending van toerisme, opelugontspanning en natuurbewaring as stimulus vir die ontwikkeling van `n agtergeblewe gebied met spesiale toepassing op Maputoland	North West	1979
5	Die beplanning van die ontwikkelende verspreide stad in die gebied Carletonville, Fochville en Westonaria	North West	1985
6	Die nasionale fisiese ontwikkelingsplan van Suid Afrika en sy teoretiese grondslae: `n Kritiese evaluasie	North West	1979
7	Die ruimtelik-ekonomiese implikasies van nywerheidsontwikkeling en desentralisasie as `n deel van geïntegreerde ontwikkelingsbeleid vir Suider Afrika	North West	1987
8	Grensafbakening van gereformeerde gemeentes binne die geografiese gebiede van Krugersdorp en Griekwaland-wes: `n Fisiese beplanningsondersoek	North West	1992
9	The role and development of intermediate regions in national physical planning	North West	1993
10	Die administrasie en organisasie van ontspanning vir die Bantoe in enkele stedelike gebiede	North West	1976
11	Die behoefte van die Bantoebevolking aan buitelugontspanning tot die jaar 2000 en die potensiaal van die tuislande om daaraan te voldoen	North West	1973
12	Die beplanningsimplikasies van die proses van funksieverandering by myndorpe met spesiale verwysing na die Witwatersrand	North West	1986
13	Die invloed van moderne vervoer op die ontwikkeling van dorpe in Wes-Transvaal	North West	1981
14	Die rol van die Departement Gemeenskapsbou en die latere Direktoraat Gemeenskapsontwikkeling as ontwikkelaar in die Republiek van Suid Afrika	North West	1983
15	Dorpstigting in die Bantoetuislande	North West	1969
16	Vooruitbepaling van invloede op die omgewing in gevalle van beplannings- en ontwikkelingsvoorstelle	North West	1987
17	A bioregional plan and growth management framework for the Knysna municipality	Cape Town	2006

#	Title	University	Year
18	A critical examination of the public participation process that began in 1989 and concluded in 1992 with the proclamation of Imizamo Vethu as an informal settlement	Cape Town	2006
19	Addressing performance constraints in the Cape Town city centre's movement network: A systems perspective	Cape Town	2006
20	Case study of Westlake estate as an example of disposal of public owned land for low income housing through public-private partnership	Cape Town	2006
21	Considering public participation in a South African urban planning context	Cape Town	2005
22	Integrated environmental and land use management: Current legislative framework, practice and outcomes and the way forward	Cape Town	2006
23	Investigating the impacts of intergovernmental initiatives on area-based spatial development	Cape Town	2006
24	Review of Botswana national settlement policy – 1998	Cape Town	2006
25	An architectural strategy for the rehabilitation and integration of street children back into society: A Durban case study	KwaZulu Natal	2006
26	Architecture and identity- the perception and reflection of identity through architectural expression: A case study of Wentworth	KwaZulu Natal	2007
27	Aspects of digital tools in the design process: Towards an integration of computers into the architectural school design studio	KwaZulu Natal	1999
28	Information and architecture: The synthesis of information and architecture in KwaZulu Natal	KwaZulu Natal	2006
29	Leisure facilities in the residential inner city	KwaZulu Natal	2006
30	Sustainable development: The adoption of principles of sustainable development by the architecture and construction industry in South Africa	KwaZulu Natal	2006
31	The sacredness of space and its values in the Maronite church in Lebanon: A fusion between liturgy and place	KwaZulu Natal	2004
32	An evaluation of the application of the KwaZulu Natal land use management system/model in a peri urban/rural setting	KwaZulu Natal	2005
33	The relevance of town planning education in South Africa	KwaZulu Natal	2002
34	An approach to spatial planning in Southern Africa with particular reference to Transkei's north-east region	KwaZulu Natal	1986
35	Planning for change in the shopping structure of metropolitan Durban	KwaZulu Natal	1984
36	Re-imagining planning: an engagement with postmodernism and pragmatism	KwaZulu Natal	1998

#	Title	University	Year
37	Restructuring, migration and regional policy in South Africa: The case of Newcastle	KwaZulu Natal	1997
38	The political economy of urban and regional planning in South Africa:1900 to 1988 towards theory to guide progressive practice	KwaZulu Natal	1989
39	Aardrykskundige faktore met betrekking tot argitektuur en stadsbou in Suid Afrika	Free State	1969
40	Architects and housing: Challenges within the low-income housing sector in South Africa	Free State	2001
41	Architecture on paper: A study on the significance of imaginary architectural space	Free State	1998
42	Die argitektoniese bydrae van Francis Lennox Canning: 1884-1895	Free State	1990
43	Die gebruik van rekenaar ondersteunde ontwerpstelsels as `n hulpmiddel in die kreatiewe ontwerpproses met spesifieke verwysing na die opleiding van argitektuurstudente	Free State	1990
44	Die verandering en ontwikkeling van die woonhuisargitektuur in Bloemfontein gedurende die tydperk 1846-1946 met bydraende faktore	Free State	1991
45	Identifisering en evaluering van die argitektuur van Philippolis	Free State	1989
46	Oorspronge, ontwikkeling en neergaan van die Kappiekerk boustyl in Suid Afrika	Free State	1982
47	Origins and development of architectural perception	Free State	1982
48	Time and architecture: The interrelationship between time concepts and meaning in western architecture	Free State	1989
49	The architecture of the Orange Free State republic:1854 - 1902	Free State	1987
50	`n Beplanningstudie oor die leefbaarheid van kleurlingbehuising met spesiale verwysing na Heidedal, Bloemfontein	Free State	1978
51	`n Ondersoek na ontwikkelingsvoorstelle vir die oopruimte langs die spoorlyn tussen Fichardtpark/Hospitaalpark en Wilgehof/Gardeniapark	Free State	2001
52	`n Ondersoek na operasionele praktykvoerings- en bestuursriglyne vir stads en streekbeplanners: Moontlike riglyne vir die privaatpraktyk	Free State	1994
53	`n Studie oor die proses van omgewingsbeplanning van toepassing op die groter Bloemfontein	Free State	1997
54	Agri-villages as a means to help solve land tenure in Steve Tshwete municipality	Free State	2007
55	An analysis of the Maloti Drakensberg Trans-frontier project from a local government regional planning perspective	Free State	2006

#	Title	University	Year
56	Beplanning en die behoud van skoolleerlingbronne	Free State	1996
57	Beplanningsriglyne vir die volhoubare benutting van stedelik ekologies sensitiewe areas	Free State	1998
58	Die beplanning en hergebruik van die medium digtheidsbehuising in die voorgestelde Olimpiese dorpie, Wingfield, Kaapstad, 2004	Free State	1995
59	Die beplanning van nasionale parke as rasionele en doelverwesenliking aktiwiteit	Free State	1977
60	Die bewaring van die historiese erfenis van Bloemfontein met spesiale verwysing na die rol van beleidsformulering en beplanning	Free State	1986
61	Die geïntegreerde stedelike voetslaanpadbeplanningsmodel vir die volhoubare bewaring, benutting en bestuur van stedelike oop ruimtes	Free State	2000
62	Die plasing van die superwinkels in welkom met spesialeverwysing na die verkeersprobleme	Free State	1979
63	Die plasing van stortingsterreine: Die stadsbeplanner se rol met spesiale verwysing na die versagting van omgewingsimpakte	Free State	1994
64	Die rol van die plattelandse dorp Barkly-Wes in sy ruimtelike omgewing en as periferiedorp van die stad Kimberley	Free State	2000
65	Die voetganger in die middestad van Windhoek: die soeke na die 'verlore skakel' tussen die bestaande voetgangernetwerk en die Zoo Park	Free State	1995
66	Future planning for sports and recreational facilities in Mangaung with specific reference to soccer	Free State	2000
67	Guidelines for casino development in cities with a case study for Bloemfontein	Free State	2003
68	Middestedelike verval en hernuwing: Die sentrale sake kern van Bloemfontein as vervalsone met beplanningsriglyne vir vernuwing	Free State	2001
69	Ontleding en beplanningsvoorstelle vir die oorgangsgebied van die middestad suid van Bloemspruit – Bloemfontein	Free State	1978
70	Oranjesig gebied: Struktuurplan aan die hand van henuwingsvoorstelle	Free State	1992
71	Phomolong: The role of low-cost housing and commuting in community formation	Free State	1990
72	Plaaslike struktuurplanne vir Rayton/Groenvlei en Quaggasfontein	Free State	1987
73	Riglyne vir `n metropolitaanse oopruimte sisteem vir Bloemfontein	Free State	1990
74	Riglyne vir die ontwikkeling van die Mier-landelike gebied	Free State	1995

#	Title	University	Year
75	Towards an integrated information system for the South African planning process	Free State	1999
76	Towards planning guidelines for the management of commonage to enhance urban development with specific reference to the Northern Free State district	Free State	2000
77	Town planning guidelines for residential densification of Windhoek	Free State	2006
78	Urban black housing in Soweto	Free State	1979
79	Urban design aspects of the Grahamstown core area with reference to pedestrians	Free State	1994
80	Capital city urban design with special reference to a parliamentary capital for South Africa	Free State	1995
81	Die informele sektor in stadsbeplanning met spesiale verwysing na oorlewingsbedrywe	Free State	1990
82	Publieke deelname as `n kulturele determinant in beplanning binne die denkkader van die urbanistiek konsep	Free State	1989
83	A pattern of Boer settlement at the Cape eastern frontier: 1769-1779	Pretoria	1997
84	A study of the liaison mechanism between architects in the private sector and the TPA in relation to the design of and additions to primary schools	Pretoria	1983
85	Die formulering van 'n vindingsmodel vir die ekologie van die ioniese argitektoniese kapiteel	Pretoria	1992
86	Die invloed van die Arts&Crafts-beweging op die huishoudelike argitektuur in en om Pretoria	Pretoria	1996
87	Die Nederduitse Gereformeerde pastorie: Behoefte en voorsiening	Pretoria	1989
88	Digthede en benuttingsekonomie van grond vir behuising in Suid-Afrikaanse stede	Pretoria	1976
89	Formulation of an effectual approach to the design-making process in architectural design	Pretoria	1992
90	Groepsvorming as faktor in manskoshuisbeplanning: 'n Argitektoniese-sielkundige ondersoek	Pretoria	1970
91	`n Konteks vir die bepaling van 'n inhoud van 'n kursus oor die argitektuurgeskiedenis van die Suid-Afrikaanse omgewing	Pretoria	2001
92	`n Ondersoek na die lewensvatbaarheid van verhoogde behuisingsdigtheid in 'n bestaande woongebied in Pretoria	Pretoria	1977
93	`n Ondersoek na die optimalisering van bestuursaktiwiteite in argitektuurpraktyke deur die benutting van rekenoutomate	Pretoria	1977

#	Title	University	Year
94	`n Ondersoek na reprografie in die argitekpraktyk met spesiale verwysing na fotografie en fotostatering	Pretoria	1988
95	`n Vertolking van Le Corbusier se mensbeskouing soos dit in sy geskrifte voorkom	Pretoria	1990
96	The background, architectural philosophy and work of Helmut Wilhelm Ernst Stauch	Pretoria	1985
97	The meaning and definition of sustainable development in the built environment	Pretoria	1998
98	The poetics of light and the glass architecture of the modern	Pretoria	2003
99	A pragmatist theory of current architecture using Rorty's perspective on Hegel	Pretoria	1997
100	An eco-systemic role for architectural style: Bearing 'the plan' in 'mind'	Pretoria	1992
101	Developing a curriculum model for architectural education in a culturally changing South Africa	Pretoria	2005
102	Grondliggende argitekte van die Departement Openbare werke in Transvaal tot 1910: Hul werk en invloed	Pretoria	2000
103	High-rise office buildings in the Transvaal 1950-1976: A study of their form-giving factors	Pretoria	1988
104	Integrating sustainable development into briefing and design processes of buildings in developing countries: An assessment tool	Pretoria	2003
105	Procurement of rural primary schools in Southern Africa: An approach to resource optimization	Pretoria	1988
106	The provision of schools by the DET in South Africa during 1983 - 1994	Pretoria	1997
107	The role of urban design in South African corridor development	Pretoria	2003
108	Towards a renewable energy strategy for South Africa	Pretoria	1997
109	Vormgewende invloede op die ontwikkeling van moskee - argitektuur binne die heilige sirkel van die Kaap tot 1950	Pretoria	1992
110	A critical analysis of the process of transformation of the city planning function in the City of Tshwane Metropolitan Municipality	Pretoria	2005
111	A model of the South African housing market	Pretoria	1999
112	A study of driver behaviour with regard to the effectiveness of traffic control and the road communication system	Pretoria	1962

#	Title	University	Year
113	An assessment of the visual environment of Pretoria as a capital city	Pretoria	1978
114	An investigation of the lease evaluation process for office buildings occupied by state departments in South Africa	Pretoria	1997
115	Bepaling van die behoefte aan 'n streeksbesigheidsentrum vir die oostelike voorstede van Pretoria met aanbevelings in die verband	Pretoria	1968
116	Beplanning vir dupleks-behuising in Pretoria	Pretoria	1976
117	Bewegingspatrone in satellietdorpe en die effek daarvan op stadsbeplanning met spesifieke verwysing na Mabopane-oos	Pretoria	1980
118	Borders, boundaries and barriers: A narrative on Hammanskraal/Temba	Pretoria	1997
119	Die aanwending van voetgangerstrate as 'n beplanningsmiddel in middestede met spesiale verwysing na die middestad van Bloemfontein	Pretoria	1977
120	Die probleem van kwynende dorpe en hulle instandhouding	Pretoria	1970
121	Die rol van die dienste sektor in die na-nywerheid ontwikkelingsbeleid in Suid Afrika	Pretoria	1988
122	Die rol van die skemakaart in stadsbeplanning in Transvaal	Pretoria	1967
123	Die stad as funksionele kern van die Bantoetuisland, met spesiale verwysing na die Hammanskraalgebied	Pretoria	1968
124	Die toepaslikheid van intelligente stedelike inligtingstelsels ter ondersteuning van residensiële ontwerp	Pretoria	1994
125	Kragstasie-projekte in Suidelike Afrika en die beplanning van die stedelike hinterland	Pretoria	1984
126	`n Evaluering van sekere voorstelle van Driessen-komitee ten opsigte van massavervoer met spesiale verwysing na die Wes-Mootgebied in Pretoria	Pretoria	1977
127	`n Ondersoek na die voorsiening van buitestraat parkeerplekke in die sentrale besigheidsgebied van Pretoria	Pretoria	1980
128	`n Streeksanalise en ontwikkelingsvoorstelle vir die Gamtoosriviervallei	Pretoria	1972
129	`n Studie van Pietersburg as funksionele kern van die Noord-Transvaalse ontwikkelingstreek	Pretoria	1963
130	Omgewingskognisie van kinders in Pretoria en die riglyne wat dit vir beplanning bied	Pretoria	1995
131	Reading planning in plans (Pretoria 1970-1998) some passages of dis-covery on the road to re-covery	Pretoria	1999

#	Title	University	Year
132	Social housing: Lessons learnt from the international experience	Pretoria	2001
133	Territorialiteit en die ruimtelike uitdrukking daarvan in woongebiede van verskillende sosio-ekonomiese status in Pretoria	Pretoria	1991
134	The Mabopane-Centurion development corridor: A historical analysis of successes and constraints and proposals for improvement	Pretoria	2001
135	The needs, attitudes and preferences of flat dwellers in metropolitan Johannesburg and the planning implications thereof	Pretoria	1980
136	The physical, administrative and socio-economic development of Mamre	Pretoria	1968
137	The residential growth patterns of the south-eastern sector of Pretoria and the planning implications thereof	Pretoria	1984
138	Verkeersbeplanningsnorme vir woonstelgeboue in Suid Afrika	Pretoria	1973
139	A reading of power relations in the transformation of urban planning in municipalities of the Greater Pretoria Region (now Tshwane): 1992-2002	Pretoria	2005
140	Die evaluering van stadsbeplannings ontwerpmaatreëls met betrekking tot voetgangerveiligheid in Suid Afrika	Pretoria	1990
141	Die ontwikkeling en bestuur van 'n geïntegreerde inligtingstelsel vir stadsbeplanning in 'n plaaslike bestuur	Pretoria	1993
142	`n Beplanningstudie van die verstedeliking van die Oranje-Vrystaat	Pretoria	1968
143	`n Model vir die voorspelling van interne migrasie met besonderse verwysing na die Suid-Afrikaanse blankes	Pretoria	1989
144	The language game of South African urban and regional planning: A cognitive mapping from the past into the future	Pretoria	1997
145	Town planning principles for the design of a residential road network	Pretoria	1987
146	`n Ondersoek na die implementering van verdigting deur beleid binne Paarl munisipale gebied	Stellenbosch	2000
147	`n Ondersoek na Suid-Afrikaanse tendense in ontwikkelingsbeheer met spesifieke fokus op soneringskemas in die Wes-Kaapprovinsie	Stellenbosch	1999
148	`n Ontleding van die konsep ‘geïntegreerde ontwikkeling' soos vervat in die Wes-Kaapse wetsontwerp op beplanning en ontwikkeling	Stellenbosch	1998
149	`n Vergelykende studie tussen die ruimtelike ontwikkelingsraamwerke van Tygerberg en Kaapstad plaaslike owerhede met die van die Kaapse metropool	Stellenbosch	2001
150	An open space approach to the design of residential streets in low-income areas, incorporating the *woonerf* concept	Stellenbosch	1994

#	Title	University	Year
151	Die doeltreffendheid van struktuurplanne t.o.v. die bestuur van stedelike ontwikkeling	Stellenbosch	1998
152	Die invloed van buurt- en streek winkelsentrums op sentrale sakekerne	Stellenbosch	1999
153	Die landelike-stedelike oorgangsone van Stellenbosch: `n Ondersoek na die bewaring van die oorgangsone in die lig van toekomstige stedelike uitbreiding	Stellenbosch	1990
154	Die ligging, grootte en uitleg van aftree-oorde ontwikkel deur privaatinisiatief	Stellenbosch	1989
155	Die rol van oopruimtes binne metropolitaanse verband: Riglyne vir beplanning	Stellenbosch	1994
156	Hoe digtheidsbehuising as meganisme om die probleem van stedelike sprei aan te spreek	Stellenbosch	1998
157	Metropolitan management and planning in South Africa	Stellenbosch	2000
158	Opelugontspanning in die Sentraal-Weskus	Stellenbosch	1970
159	Persepsies op mikro-woonbuurtvlak in verband met veiligheid	Stellenbosch	1994
160	Publieke deelname tydens die beplanningsproses: Sekere behuisingsvoorkeure	Stellenbosch	1987
161	Riglyne en stappe vir die ontwikkeling en opgradering van stedelike riviere vir ontspanningsdoeleindes	Stellenbosch	1990
162	Stedelike bewaring: `n Toerisme wins	Stellenbosch	1990
163	Stilbaai: `n Studie van die konflik tussen bewaring en ontwikkeling in kusdorpe en aanbevelings vir ordelike en sinvolle ontwikkeling	Stellenbosch	1986
164	Terreinbeplanning - `n Ondersoek van sekere ontwerpbeginsels vir multi-verdieping woonstelkomplekse met verwysing na Algoapark - Port Elizabeth	Stellenbosch	1987
165	The integration of urban transportation and spatial planning in metropolitan context	Stellenbosch	1998
166	The planning of a greenway: A guideline	Stellenbosch	1987
167	The socio-economic impact of regional shopping centres on surrounding retail distribution with particular reference to the Somerset Mall, Somerset West	Stellenbosch	1994
168	The viability of pedestrian street malls as an instrument to revitalise declining central business districts with reference to the St George's street mall in Cape Town	Stellenbosch	1990
169	Towards a morphological understanding of the Stellenbosch townscape: An analysis of the historical town plan	Stellenbosch	1990

#	Title	University	Year
170	Veranderde perspektiewe en persepsies met betrekking tot vakansiedorp-ontwikkeling: St. Francisbaai	Stellenbosch	1988
171	Verdigting: `n Ondersoek na die haalbaarheid en aanvaarbaarheid daarvan	Stellenbosch	1998
172	Voorsiening vir die informele sektor in toekomstige stedelike beplanning van dorpe	Stellenbosch	1989
173	`n Groengordelstelsel vir die Kaapse metropolitaanse gebied	Stellenbosch	1975
174	`n Ondersoek na beleidsformulering en vestigingsfaktore van beplande grootskaalse kleinhandelsinstellings	Stellenbosch	1989
175	An analysis of activity nodes and the formulation of a decision support nodal model in the context of the Western Metropolitan local council area	Stellenbosch	1999
176	Beplanning van die verstedeliking van die kleurlinggroep in Wes-Kaapland met spesiale verwysing na die Weskus	Stellenbosch	1976
177	Organisasie vir beplanning in die Kaapse metropolitaanse streek	Stellenbosch	1979
178	Architectural semiotics a critical assessment of the work of Diana Agrest and Mario Gandelsonas	Witwatersrand	1991
179	Critical approaches to the discourses of climatic responsiveness in modern architecture in West Africa	Witwatersrand	2002
180	French conservation legislation: Strategies for conservation in the Marais quarter of Paris with some implications for the South African conservation movement	Witwatersrand	1990
181	Housing: A perspective on development	Witwatersrand	1979
182	Manifestations of architecture as works of art	Witwatersrand	1980
183	Mies van der Rohe: An exploration of his architectural doctrines and the factors and circumstances that might have influenced them	Witwatersrand	1987
184	Montage: The image of space/time in film and architecture	Witwatersrand	2003
185	Order out of chaos an approach to architecture and its dissipative behaviour	Witwatersrand	1986
186	Phillip Maurice Dudgeon: His work in Natal during the period 1877-1888 seen against his background of Victorian Britain and Natal	Witwatersrand	1980
187	Post-modern aesthetic theory with reference to South African architecture	Witwatersrand	1989
188	Space, tradition and comprehensive health care: Architecture of primary health care facilities in rural South Africa	Witwatersrand	1997

#	Title	University	Year
189	Synagogues on the Witwatersrand and in Pretoria before 1932: Their origin, form and function	Witwatersrand	1988
190	The architecture of Kimberly: 1871-1914	Witwatersrand	1984
191	The domestic work of Sir Herbert Baker and his influence in the field of building in the Transvaal	Witwatersrand	1958
192	The establishment of guidelines for the design of attached residential sunspaces in the Witwatersrand area	Witwatersrand	1990
193	The loss of innocence: Cognitive method, creativity, and some implications for the use of the computer in architectural design	Witwatersrand	1990
194	The making of lobby architecture decoration and sculpture	Witwatersrand	2003
195	The transition between late Victorian and Edwardian speculative house in Johannesburg from 1890-1920	Witwatersrand	1987
196	Writing type: The sceptre of Quatremere de Quincy in architectural theory since 1960	Witwatersrand	1997
197	Early architecture at the Cape under the VOC (1652-1710): The characteristics and influence of the proto-Cape Dutch period	Witwatersrand	1996
198	Major developments in the rural indigenous architecture of Southern Africa of the post-Difaqane period	Witwatersrand	1985
199	The architecture of the street	Witwatersrand	1953
200	A planning policy for the provision of cycling systems: Case study Sandton municipal area	Witwatersrand	1980
201	Access to low-income housing in South Africa	Witwatersrand	1986
202	Attitudes of government, citizenship, services and tenure, and the consolidation of poor residential environments	Witwatersrand	1994
203	Evaluation of rural transportation systems in Africa	Witwatersrand	1989
204	Industrial decentralisation and regional development in South Africa	Witwatersrand	1989
205	Planning for employment creation: The effect of changes in technology on the division of labour and skills case study: the paper and pulp industry	Witwatersrand	1989
206	Planning for rural development: A political - economic study of agricultural policy in Zimbabwe	Witwatersrand	1985
207	The application of the principles of president in the decision-making processes of planning and law	Witwatersrand	1991

#	Title	University	Year
208	The historical grid towns of the Transvaal: Cultural and cadastral influences on planning (1883-1860)	Witwatersrand	1990
209	Change and continuity in spatial planning: Metropolitan planning in Cape Town under political transition	Witwatersrand	2001
210	The homelessness problem: Planning, phenomenology and gender perspectives	Witwatersrand	1997

APPENDIX 3: LIST OF SURVEYED ARTICLES

#	Title	Authors	Year
1	The developer's vernacular: The owner's influence on building design	Rabinowitz	1996
2	Toward a residential zoning regulation approach for Saudi Arabia	Alnowaiser	1996
3	On narrow ground: Planning in ethnically polarized cities	Bollens	1996
4	Cluster housing at the rural-urban fringe: The search for adequate and satisfying places to live	Sullivan	1996
5	Hem: Directed means for improving current limits of privacy research	Kupritz	1996
6	Socioenvironmental determinants of social interactions in a squatter settlement in istanbul	Erdogan, Saglamer, Dokmeci & Dikbas	1996
7	Bitter homes and gardens: The meanings of home to families of divorce	Anthony	1997
8	Mental image and internal representation	Chan	1997
9	Neighborhood - The metamorphosis of an idea	Kallus & Law-Yone	1997
10	The social construction of home	Somerville	1997
11	Measuring urban improvement: Assessing the physical effects of streetscape improvement programs	Whitman	1997

#	Title	Authors	Year
12	An ecological approach to the study of urban spaces: The case of a shantytown in Brasilia	Ribeiro	1997
13	Urban complexity: Toward the measurement of the physical complexity of street-scapes	Elsheshtawy	1997
14	Diverging attitudes of planners and the public: An examination of architectural interpretation	Hubbard	1997
15	Collective housing in Scandinavia - How feminism revised a modernist experiment	Vestbro	1997
16	Nursing home design: A misguided architectural model	Schwarz	1997
17	Forting up: gated communities in the United States	Blakely & Snyder	1998
18	Wayfinding and dementia: some research findings and a new look at design	Passini, Rainville, Marchand & Joanette	1998
19	Transit villages: assessing the market potential through visual simulation	Cervero & Bosselmann	1998
20	St. Pancras reconsidered: a case study in the interface of architecture and engineering	Herbert	1998
21	Housing rehabilitation and its role in neighborhood change: a framework for evaluation	Ulusoy	1998
22	Feng-shui models structured traditional Beijing courtyard houses	Xu	1998
23	The mythical conception of rail transit in Los Angeles	Richmond	1998
24	Civil spaces: A critical perspective of defensible space	Tijerino	1998
25	Leisure preferences and open space needs in an urban Chinese American community	Zhang & Gobster	1998
26	The future of adobe settlements in Saudi Arabia	Ibrahim	1999
27	Designing for persons with AIDS: A post-occupancy study at the Bailey-Boushay House	Shepley & Wilson	1999
28	Soundbite cities: Imagining futures in debates over urban form	Forsyth	1999
29	A framework for studying vernacular design	Rapoport	1999
30	The traditional characteristics reflected in the plan of modern apartment houses in Korea	Choi	1999

#	Title	Authors	Year
31	Challenges of mediation and deliberation in the design professions: Practice stories from Israel and Norway	Forester	1999
32	Negotiated development: Best practice lessons from two model processes	Paterson	1999
33	Reconceiving historic preservation in the modern city: Conflict and consensus building in Atlanta	Elliott	1999
34	Framing and reframing in land use change conflicts	Kaufman & Smith	1999
35	Cultural values and housing behavior in spontaneous settlements	Kellett	1999
36	On the construction of research-based design: A community health center	Verderber & Refuerzo	1999
37	Planners, architects, the public, and aesthetics factor analysis of preferences for infill developments	Jeffrey & Reynolds	1999
38	Strangers in the night: Women's fear of sexual assault on urban college campuses	Day	1999
39	Shades of duality: Perceptions and images of downtown workers in Los Angeles	Loukaitou-Sideris & Gilbert	2000
40	Privacy management at work: A conceptual model	Kupritz	2000
41	American cohousing: The first five years	Fromm	2000
42	Cohousing: Verifying the importance of community in the application of environmentalism	Meltzer	2000
43	Cohousing in HUD housing - problems and prospects	Hasell & Scanzoni	2000
44	Site planning, building design and a sense of community: An analysis of six cohousing schemes in Denmark, Sweden, and the Netherlands	Marcus	2000
45	From collective housing to cohousing - a summary of research	Vestbro	2000
46	The complexity of tall building faÃ§ades	Heath, Smith & Lim	2000
47	A safe and welcoming school: What students, teachers, and parents think	Maxwell	2000
48	Women's visual privacy in traditional and modern neighborhoods in Damascus	Al-Kodmany	2000
49	Measuring the public realm: A preliminary assessment of the link between public space and sense of community	Talen	2000

#	Title	Authors	Year
50	Aging worker perceptions about design and privacy needs for work	Kupritz	2001
51	Design communication and aesthetic control: Architects, planners, and design review	Jones	2001
52	Bridging the gap between technical and local knowledge: Tools for promoting community-based planning and design	Al-Kodmany	2001
53	Effects of street parks on social interactions among neighbors: A place perspective	Skjaeveland	2001
54	The art of architectural decoration in the traditional house of Al-Alkhalaf, Saudi Arabia	Abu-Ghazzeh	2001
55	Disability: The demographics of physical functioning and home environments of older Americans	Tabbarah, Mihelic & Crimmins	2001
56	International perspectives on housing frail elders	Liebig	2001
57	Difficulty, dependence, and housing accessibility for people aging with a disability	Connell & Sanford	2001
58	Rethinking public and private space: Religion and women in Muslim society	Mazumdar & Mazumdar	2001
59	Planning in response to terrorism: The case of Manchester, England	Kitchen	2001
60	What makes buildings catalytic? How cultural facilities can be designed to spur surrounding development	Sternberg	2002
61	Rural areas that affect older migrants	Hunt, Marshall & Merrill	2002
62	The neighborhood concept: A retrospective of physical design and social interaction	Patricios	2002
63	Broadacre City: The city in the eye of the beholder	Dehaene	2002
64	Why architects and laypersons judge buildings differently: Cognitive properties and physical bases	Gifford, Hine, Muller-Clemm & Shaw	2002
65	Exporting architectural services: The English and French experiences	Winch, Grezes & Carr	2002
66	New urbanism: Ambiguous certainties	Beauregard	2002
67	Accessible buildings, architects, and the ADA law: The MCI Center sports arena case	Mazumdar & Geis	2002
68	Navigating ethnic vernacular landscapes then and now	Krase	2002

#	Title	Authors	Year
69	Recapturing erased histories: Ethnicity, design, and cultural representation - A case study of Independence National Historical Park	Low, Taplin, Scheld & Fisher	2002
70	Housing occupancy standards: Inscribing ethnicity and family relations on the land	Pader	2002
71	Deru Kugi wa Utareru or the nail that sticks up gets hit: The architecture of Japanese American identity, 1885-1942. The rural environment	Dubrow	2002
72	Regeneration of urban commercial strips: Ethnicity and space in three Los Angeles neighborhoods	Loukaitou-Sideris	2002
73	Understanding the consumer perspective to improve design quality	Stern, MacRae, Gerteis, Harrison, Fowler, Edgman-L., Walker & Ruga	2003
74	Environmental barriers and disability	Gray, Gould & Bickenbach	2003
75	Effects of environmental simulations and television on blood donor stress	Ulrich, Simons & Miles	2003
76	Architects' use of information in designing therapeutic environments	Tetreault & Passini	2003
77	Research-based architecture and the community healthcare consumer: A statewide initiative	Verderber & Refuerzo	2003
78	Marketing therapeutic environments for Alzheimer's care	Zeisel	2003
79	Accommodating privacy to facilitate new ways of working	Kupritz	2003
80	From hybrid housing to cybrid neighborhoods: Case studies of five decentralized tele-workspaces	Johnson	2003
81	Planner's perceptions of their role in socially responsive neighborhood design	Lawhon	2003
82	Open space preservation policies: An institutional case study	Romero	2003
83	Climate, culture, and religion: Aspects of the traditional courtyard house in Iran	Memarian & Brown	2003
84	Architects, the law, and accessibility: Architect's approaches to the Ada in Arenas	Mazumdar & Geis	2003
85	University outdoor spatial layout effect on perception of students' interaction and group seclusion	Al-Homoud & Abu-Obeid	2003
86	Exploring the influence of new urbanism in community planning practice	Grant	2003
87	Stumbling blocks in novice building design	Saariluoma & Maarttola	2003

#	Title	Authors	Year
88	The main street approach to downtown development: An examination of the four-point program	Robertson	2004
89	Environmental atmosphere of outdoor residential areas in southern Sweden: A comparison of experts and residents	Cross & Kuller	2004
90	Banning the "snout house": The politics of design in Portland, Oregon	Bello & Adler	2004
91	Entropy and visual diversity in the environment	Stamps III	2004
92	Daylight interventions and Alzheimer's behaviors - A twelve-month study	La Garce	2004
93	Equal opportunity restroom code: A knowledge management model	Wang & Huang	2005
94	What do planners need to know? Identifying needed competencies, methods, and skills	Alexander	2005
95	Anthropocentric problem solving in planning and design, with analytic hierarchy process	Banai	2005
96	Qualitative methods in planning research and practice	Dandekar	2005
97	Planning methods and good city form	Ellis	2005
98	The transitional space in the traditional urban settlement of Cyprus	Pulhan & Numan	2005
99	The value of environmental criminology for the design professions of architecture, urban design, landscape architecture, and planning	Rondeau, Brantingham & Brantingham	2005
100	Measuring crime prevention through environmental design	Minnery & Lim	2005
101	New urbanism and CPTED in the British planning system: Some critical reflections	Kitchen	2005
102	Implementing urban design in America: project types and methodological implications	Lang	1996
103	Controlling urban design - Part 1: a possible renaissance?	Carmona	1996
104	To know and to make: the link between research and urban design	Ter Heide & Wijnbelt	1996
105	Cracks in the city: addressing the constraints and potentials of urban design	Loukaitou-Sideris	1996
106	A case of iconographic competition: the building industry and the postmodern landscape	Sternberg	1996

#	Title	Authors	Year
107	Controlling urban design - part 2: realizing the potential	Carmona	1996
108	The suburban public realm I: its emergence, growth and transformation in the American metropolis	Southworth & Parthasarathy	1996
109	The suburban public realm II: Eurourbanism, new urbanism and the implications for urban design in the American metropolis	Southworth & Parthasarathy	1997
110	Marketing local identity	Erickson & Roberts	1997
111	Cafe culture and the city: the role of pavement cafes in urban public social life	Montgomery	1997
112	Hungerford Bridge: the ugly duckling becomes a swan	Haywood	1997
113	A procedural explanation for contemporary urban design	George	1997
114	Form, function and sign: signifying the past in urban waterfront regeneration	O'Brien	1997
115	Memory, collective identity and urban design: the future of Berlin's Palast der Republik	Neill	1997
116	Dealing with incremental change: an application of urban morphology to design control	Hall	1997
117	The statutory protection of historic parks and gardens: an exploration and analysis of 'structure', 'decoration' and 'character'	Pendlebury	1997
118	Theory of the urban web	Salingaros	1998
119	Learning the lessons of housing over shops initiatives	Goodchild	1998
120	Making a city: urbanity, vitality and urban design	Montgomery	1998
121	Emerging urban form types in a city of the American Middle West	Maller	1998
122	Private-property decision makers and the quality of urban design	Rowley	1998
123	Design control - bridging the professional divide, part 1: a new framework	Carmona	1998
124	City centre blocks and their evolution: a comparative study of eight American and Australian CBDs	Siksna	1998
125	Design control - bridging the professional divide, part 2: a new consensus	Carmona	1998

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126	The role of village design statements in fostering a locally responsive approach to village planning and design in the UK	Owen	1998
127	Reconsidering urban design: Thoughts about its definition and status as a field or profession	Schurch	1999
128	Urban space and its information field	Salingaros	1999
129	Place and space in the networked city: conceptualizing the integrated metropolis	Roberts, Lloyd-Jones, Erickson & Nice	1999
130	English local planning authorities and design appeals: perceptions and realities	Punter & Bell	1999
131	The diffusion of innovations in urban design: The case of sustainability in the Hulme development guide	Symes & Pauwels	1999
132	Introducing gender to the critique of privatized public space	Day	1999
133	Non-place and placelessness as narratives of loss: Rethinking the notion of place	Arefi	1999
134	The elements of townscape and the art of urban design	Taylor	1999
135	Urban design, urban quality and the quality of life: Reviewing the department of the environment's urban design campaign	Chapman & Larkham	1999
136	The child as citizen: Experiences of British town and city centres	Woolley, Spencer, Dunn & Rowley	1999
137	Residential visual privacy: Traditional and modern architecture and urban design	Al-Kodmany	1999
138	Public participation in the conservation of historic areas: Case-studies from North-east England	Townshend & Pendlebury	1999
139	Banlieues 89: Urban design and the urban question	Roberts	2000
140	Israeli new town plans: Physical transformations	Aravot & Militanu	2000
141	The Blue Line blues: Why the vision of transit village may not materialize despite impressive growth in transit ridership	Loukaitou-Sideris & Banerjee	2000
142	The contemporary city in four movements	Schwarzer	2000
143	The urban picturesque: An aesthetic experience of urban pedestrian places	Isaacs	2000
144	The role of urban design in cultural regeneration	Wansborough & Mageean	2000

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145	Responding to the design needs of disabled people	Imrie	2000
146	Harmonies of urban design and discords of city-form: Urban aesthetics in the rise of Western civilization	Akkerman	2000
147	Autocratic control and urban design: The case of Tehran, Iran	Mazumdar	2000
148	Designerly argumentation in Boulder, Colorado	Sancar & Onaran	2001
149	Using conjoint analysis to formulate user-centred guidelines for urban design: the example of new residential development in Israel	Katoshevski & Timmermans	2001
150	Authenticity and the sense of place in urban design	Salah Ouf	2001
151	The subjective duration of time in the experience of urban places	Isaacs	2001
152	From abstract to concrete: Subjective reading of urban space	Kallus	2001
153	The continuing value of planned community: Radburn in the evolution of suburban development	Lee & Stabin-Nesmith	2001
154	Reuniting urban form and urban process: The prince of Wales's urban design task force	Hanson & Younes	2001
155	Skateboarding: The city as a playground	Wooley & Johns	2001
156	Linear parks and urban neighbourhoods: A study of the crime impact of the Boston South-west Corridor	Crewe	2001
157	Memory, democracy and urban space: Bangkok's 'path of democracy'	Dovey	2001
158	Public art: A local authority perspective	Hamilton, Forsyth & De Iongh	2001
159	The development process of urban and architectural guidelines for the rehabilitation of an inner-city neighbourhood: Le Village, Cornwall, Ontario, Canada	Friedman, Lin & Krawitz	2002
160	Meaningful urban design: Teleological/catalytic/relevant	Inam	2002
161	European cities in competition and the new 'uses' of urban design	Gospodini	2002
162	Structuring a landscape, structuring a sense of place: The enduring complexity of Olmsted and Vaux's Brooklyn Parkways	Macdonald	2002
163	Stakeholder views on value and urban design	Carmona, De Magalhaes & Edwards	2002

#	Title	Authors	Year
164	Brooklyn's vernacular waterfront	Campo	2002
165	Back to phenomenological placemaking	Aravot	2002
166	Car parking and residential development: Sustainability, design and planning policy, and public perceptions of parking provision	Stubbs	2002
167	The New Urbanism: Critiques and rebuttals	Ellis	2002
168	Help for urban planning: The transect strategy	Talen	2002
169	The sectors of the transect	Brower	2002
170	Large-scale traditional neighbourhood development and pre-emptive ecosystem planning: The Markham experience, 1989-2001	Gordon & Tamminga	2002
171	The New Urbanism and English residential design guidance: A review	Tiesdell	2002
172	The appearance of english hill towns in the landscape	Owen	2003
173	Mobility environments and network cities	Bertolini & Dijst	2003
174	Deserted streets in a jammed town: The gated community in Chinese cities and its solution	Miao	2003
175	Sense of place, authenticity and character: A commentary	Jiven & Larkham	2003
176	Is there a place for children in the city?	Churchman	2003
177	From design advice to peer review: The role of the Urban Design panel in Vancouver	Punter	2003
178	Developing sustainable communities in Edinburgh's South East Wedge: The settlement model and design solution	Deakin	2003
179	Measuring urbanism: Issues in smart growth research	Talen	2003
180	Towards successful home zones in the UK	Biddulph	2003
181	The use of streets: A reassessment and tribute to Donald Appleyard	De Vasconcellos	2004
182	Design matters: Major house builders and the design challenge of brownfield development contexts	Tiesdell & Adams	2004

#	Title	Authors	Year
183	Urban parks and addiction	Aminzadeh & Afshar	2004
184	Dementia-friendly cities: Designing intelligible neighbourhoods for life	Mitchell, Burton & Raman	2004
185	Surveys and sketches: 19th-century approaches to colonial urban design	Brand	2004
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