Spatial Systems as Producers of Meaning
- the idea of knowledge in three public libraries

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Licentiate Thesis
Stockholm, Sweden 2004
Spatial Systems as Producers of Meaning
- the idea of knowledge in three public libraries

Licentiate thesis, Daniel Koch
KTH School of Architecture
Architecture/Spatial Analysis
Stockholm, 2004
Cover Photography:
Press Photo of the City Library of Växjö
The atrium, from the basement floor
Hans Runesson

Licavhandling/Licentiate Thesis
TRITA-ARK-Forskningspublikationer 2004:2
ISSN 1402-7453
ISRN KTH/ARK/FP-04:2:SE
ISBN 91-7283-866-3
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100 44 Stockholm
SWEDEN
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Preface
Architecture/Complex Spatial Systems. That is the working title for the PhD-project of which this licentiate thesis is a halfway step. As I put the finishing touches on the text, it strikes me as perhaps a bit ironic that the title has grown even more fitting for the project, at the same time as the project has diverged from what I first set out to do. The licentiate thesis which is now presented, the result of the first two intense years of the PhD, serves well to prove the point of how complex a question space and spatial systems is.

Taking many twists and turns, the road leading to the work now presented has been both long and rewarding, leading up to a great many loose threads which are not fit into this work for different reasons, threads that at times have been difficult or painful to let go of, and which have at times probably made the entire project seem to be a bit confused or unfocused – at least for those around me. These threads have, however, served to refine the questions and problems at hand, as well as the methods with which to approach them – and they have also served to form the broad basis and approach of the current work.

It was just such a loose thread, a need to follow a sidetrack, that got me into reading The Production of Space by Henri Lefebvre. Performing a kind of cross-reading of this work and the space syntax theories of Hillier et al lead me into the set of questions that are the main focus of this thesis – the production of meaning from how we make use of space. Though an endeavour that is far from completed – indeed, I have only begun the journey into such a cross-reading and what it leads to – it was also something that came as a clarification to myself about why I headed into research to begin with, and what it was I was searching for; the fascination for space, and how it affects us as we make use of it.

A field of research on one of the more profound ways in which architecture, through forming and organising space, affects society – and yet a field of research where curiously little have been done. How architecture, through how it performs and affects our behaviour, continuously produce meaning in the durée of day-to-day life.

Thus, what is now presented is closer to the question that got me heading down this path originally than the first formulations of the project was – the question which I, when looking back, in different ways have been trying to address through most of the projects in the later stages of my studies at the School of Architecture, KTH.

Most of all, what is now presented is the foundation for the coming work, a foundation that makes me look forward to the coming two years with the hopes of learning even more than I have learned up till now, and with hopes of being able to share what I learn with as many as possible.
In this, I am indebted to many people who have provided guidance, support, comments, criticism, ideas, reading material, inspiration, knowledge, sources et cetera, but not the least – also those who have had the courage to be hard and to tell me when I need to shape up and get to it. Though a lot of people for sure deserve to be thanked, I have resorted to mention by name only those with formal involvement in this thesis.

Still, it is in its place to thank the people who during the last years of my studies to my degree in Architecture aided in and inspired me to a theoretical approach in different ways, both providing inspiration for and supporting the will to ask the questions which lead me into the path I am now on. It is also in its place to thank my family and friends, for helping me with everything from personal to theoretical questions, down to such mundane tasks as where I am going to be living the next week.

As for the work on the PhD, I must especially thank my supervisor Dr. Lars Marcus and my second supervisor, Prof. Staffan Henriksson for their support and guidance during different stages of the process. I must also give thanks to the Library at the School of Architecture, again for much help and for all the patience with all my loans that have gone far overdue at several occasions.

Further, the staff of the Libraries herein analysed – the City Library of Malmö, the City Library of Stockholm and the City Library of Växjö – who have been most helpful with any request I have had, both those who knew what I was doing and those who simply happened to be around when I needed help with something. Also for the willingness with which I have been provided images, drawings, texts and other material vital to this thesis.

I also thank the members of the research group Spatial Analysis at the KTH School of Architecture, Jesper Steen, Lars Marcus, Magnus Blombergson, Johanna Wiklander and Alexander Ståble. Working within this small research group has made it possible to reach much further than I would ever have done on my own.

Finally, to Thomas A. Markus, for an insightful and valuable final seminar in may – for the effort and thoroughness with which the text was read, commented and corrected in everything as well as for the way in which the seminar was performed; focusing on the important, overall questions and themes, leaving the small corrections to the notes in the papers.

And again, special thanks to Lars for all the invaluable time, work and effort spent on helping me produce this thesis. And for having the faith in me to continue down the path I was starting about a year ago, when it – if I look back and am honest – must have seemed like I would never get this done in time.
1. Introduction
Hötorget, Stockholm, a sunny summer day in early June. The square is brimming with activity, from the market selling fruits, vegetables, flowers and other casual commodities, people moving everywhere and the constant sound of both heated discussions and leisure conversation mixed with the sound of the salesmen shouting out offers, and occasional buses or taxis passing by. The intense commercial activity provides life and purpose to the open space in the middle of the city, as well as atmosphere, activity and a constant stream of people moving around.

Hötorget in the evening, around seven or eight o’clock, the market stands have all closed and been moved away. The square is an open space, surrounded by three monumental buildings, the Concert House, the ‘Movie Theatre Palace’ and the department store PUB, the last closed for the day. On the square are a number of people heading to the movies or a concert. The monumentality is now the defining trait of the square, the people on their way to the cultural activities providing life – in some senses much more formal than during the day. The square is much emptier, yet provided purpose by the surrounding buildings, and the atmosphere is in large set by their form, expression and monumentality.

Hötorget, any time of the day; as it is one of the most central places in Stockholm, a large number of people present without any obvious reason except it being a strategic location and an open space in the urban fabric. A lot of people are moving by, passing the square, on the way through Stockholm City – not necessarily heading for the square itself, but moving that way because it is the closest or easiest route to wherever they were heading. Some of them run in to unexpected meetings, of old or new friends, of family members not often seen, of old relatives, of mates from school. All of them meet each other in the square, and for a period in time share the same space – not necessarily actively interacting, talking or even consciously recognising each others’ presence, but all the same being witnesses of each other for a while. Co-presence and meetings through which both the routines and social practice of daily life are reproduced, and through which the social character of the square is produced and reinforced.

The square of Hötorget has a number of different and to some extent contradicting, properties and functions that gives it meaning. It is both ‘the’ marketplace for fruit and vegetables in central Stockholm – a lively place of commerce and exchange – and a monumental place, the space in front of the three monumental buildings demarcating three of its borders. To a degree, these are functions or purposes active on different parts of the day, but both participating in giving the square character, content and meaning.

But is this all? Can we understand the life and meaning of the public square of Hötorget by these two analyses? What the short verbal illustrations above are intended to show, is that the square also serves a third ‘function’ in the city-life of Stockholm – namely that it is an important place for social life, of as well social encounters such as meetings as well as simply the presence of
others, as provided by the third description. Constantly, people are waiting for each other on the stairs to the Concert House, or on the square, or outside the department store, or they simply run in to each other and sit down or stand around talking for a while. Such a ‘function’, though not consciously ascribed to the square, also serves to provide a meaning and purpose to the square. It is, aside from ‘the market’ and ‘the place in front of the concert house’ also ‘the place where meetings take place’ or ‘where you share space with other people for a while’ – a social role that is one important characteristic of the identity of the square.

To a degree, this third ‘role’ is, naturally, a result of the former two intended or programmed functions pulling or attracting people to the square for one reason or the other. Naturally, also the physical form and open space of the square, including the stair leading up to the Concert House, contribute to its function of providing a place for co-presence and encounters – and thus an understanding of this ‘role’ or ‘function’ is achievable by analysis of those factors.

To a large degree, however, this is also a result of the square’s strategic location in the overall urban fabric – it lies in the intersection of Drottninggatan, Sergelgatan and Kungsgatan, and close to Sveavägen, all important commercial streets in the city, and at least three of them highly integrated and important routes for anyone moving around in the city. Given this strategic spatial location, it would keep part of this role as a heavily social place, both for chance-encounters and for more planned meetings with friends, fairly regardless of the function or role assigned to the square. The square, no matter what its function is, will be used as a part of social life in the city.

This – the produced, everyday use of the square – is a third basis providing character and meaning to the square, both supporting the two others and being an important source in itself. The square is a ‘social hub’ in the public space of Stockholm, and this, how it is used, by how many and during what hours of the day, as noted above, is part of its identity. This identity is not really an expression of something but a performative identity, existing only through its performance. The meaning of the square of Hötorget, thus, is to a high degree a performative meaning.

Architectural discourse on meaning mainly deals with the former two – the expression and character of the physical appearance of the square – or sometimes more focused on the spatial form of the square2 – and the assigned function, producing social relations and interaction. The theme for the last of the three descriptions, however, the through its spatial location produced use, is seldom treated in a systematic manner. That the square (or building) is used in this way might be covered – but the why’s and how’s of this are left unanswered or explained through assigned function.

The intent of this thesis is to address this question, the production of meaning emerging from the everyday use of space – the unavoidable codifica-

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1 The concept of function and its problematic ties to programme and intention will be dealt with in depth in the coming.

2 The term integration will be explained further in the coming. See also Hillier, Bill; Space is the Machine, 1996.

3 Space as something else than ‘that which is between the physical objects’ will be further developed in the coming – primarily in Social Space and Social Relations. See also e.g Lefebvre, Henri, The Production of Space, 1991, Hillier (1996), Forty, Adrian, Words and Buildings, 2000.
tion of space with meaning through everyday social practice. In this, I will repeatedly return to what could be gleaned from the three descriptions above – the structure of space in itself, the way in which functions or things are ordered in space, and the way in which the durée of everyday life is ordered and distributed by space, producing a performative spatial meaning.

Taking off in the notion that a large part of how the square is used is a result of its ‘strategic’ spatial location in the network of space that is public Stockholm, the investigation will concentrate on how spatial systems, through how they distribute people, functions, encounters and interaction in space, participate in the production of meaning – both in society as a whole and of a space or a building in particular. Thus the focus is on meaning through use, and its reliance on space as a system.

The objects of study, which will also serve as a basis from which to develop this understanding into a methodology, are three public libraries – renown in Sweden both by architects and the general public. As an investigation of meaning, the rich tradition of symbolic meanings of libraries throughout history serves as a good foundation, and their close ties to representing knowledge, literacy, information, democracy and learning can be studied and scrutinized in depth and serve as a driving force in the investigation of the spatial production of meaning – the meaning produced in, by, from and through spatial systems.

Furthermore the City Library of Malmö, recently winner of the Kaspar Sahlin Prize, the City Library of Växjö, nominated for the same, and the City Library of Stockholm, one of the most internationally known buildings in Sweden, are all important works of architecture in Sweden and present in the general discourse on architecture of today.

The intention is, within the set boundaries, to take a broad approach to the subject – the connection between configurative spatial systems and meaning – and to develop a methodology for the analysis of it. Thus a number of questions will be raised and some of the discussions will be left as yet unenclosed at the end of this work. The point, however, being that the formulation of the questions, the presentation of a thread of discussion, as based on the investigations and analyses herein, in themselves produce knowledge and understanding both of space as configurative systems, of the production of meaning and of libraries as representations of knowledge. Another reason is the fairly undeveloped character of

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6 As later developed through *distribution in space, distribution of space and distribution through space*.

7 The focus on spatial systems is not chosen on arbitrary grounds, it should be noted, but based on both the empirical findings of its relation to resulting use within the *space syntax* field of research as well as the focus on spatial systems carrying and producing ‘social’ meaning or social and cultural values in writings of e.g Foucault and Lefebvre.


9 The Kaspar Sahlin Prize is the foremost architectural prize in Sweden. It is awarded through a Jury each year amongst a selection of around four nominees.

10 See e.g Trachtenberg, Marvin & Hyman, Isabelle, *Architecture from Prehistory to Post-Modernism*, 1986, where it is one out of two examples taken from ‘modern’ Swedish architecture.
the field of research, which makes it necessary both to have a broad approach and to be tentative.

The focus in the thesis will be on meaning as related primarily to knowledge. The ways in which knowledge is presented and represented, the way in which its production is described and the way in which its distribution is performed. Throughout the discussion of meaning the common denominator will be its relation to knowledge. Further, meaning will be treated as ‘meaning in society’. What is discussed is not what a library as a configurative spatial system means to a specific person, but in 'society-in-history' at large.

The thesis is further part of a larger project – leading into a forthcoming PhD thesis, and as such partly serves to define the field of research and the questions to be dealt with in the coming work. It serves as a foundation upon which further analyses and research will be based, and to which these will be added.

This said, what is herein presented stands on its own merits and is a licentiate thesis in itself, and as such is not dependant on coming productions.

The thesis will begin with setting the theoretical foundation, in an attempt to capture its position in relation to the question of meaning (chapter two) as well as space and social relations, (chapter three) and will thus begin with a rather long excursion into these fields, which also serves to refine the question and sort out methods for the coming analysis and discussion. It further serves as a positioning of the thesis in the respective theoretical fields of ‘form and function’ and ‘form and meaning’.12

Once this is performed, it will move on to the concrete studies – the three public libraries, describing them and presenting the preliminary spatial analyses (chapter four). The results of these, reached both through a critical investigation, a spatial analysis and on-site studies and comparisons and correlations them in-between, are then used to propel the discussion forward in three themes loosely corresponding to the ones illustrated in the beginning of this introduction, and which are the foundation of the methodology – the distribution of space, the distribution in space and the distribution through space – exploring how different aspects of space and spatial configuration contributes to the production of meaning and the idea of knowledge (chapter five). This discussion will be moving freely between the libraries and will be comparing them aspect by aspect or presenting findings or cases in point in certain situations, spaces or sets thereof in one or several of the libraries.

Finally, then, in the last chapter, the threads will be tied up, and the focus will return to at first the idea of knowledge as mediated through the spatial configuration of the three libraries, then to the three libraries in themselves, summarising what the analysis has told us about them, and finally reach the aim of the thesis – the production of meaning through spatial systems – presenting a tentative methodology for how such analysis can be performed, which on a fundamental level corresponds to three modes of how it is produced in the everyday social life.

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12 The terms form and function and form and meaning are crude but to some extent represent two different approaches to architectural research that rarely coincide – at least when the form and function is seen as empirical research after regularities in the relation of form and use.
2. On meaning
2.1 Introduction

Meaning (noun) - Text: 1 the idea that something conveys to the mind

For the development of a methodology for analysis of meaning in spatial systems, a sound theoretical basis, both of space, its relation to use and the subsequent connection to meaning is needed – a basis which is herein presented. Through discussions on theoretical fields upon which the methodology is based, different ideas and theories of the sources which convey meaning in architecture will be presented, followed by a discussion on how this transfers to spatial system analysis. The following is an attempt to present the theoretical basis of meaning as considered in this thesis.

When addressing the question of meaning in architecture, one enters a vast field of theories and writings – and an ongoing, living discourse of today. This means that anything said will be in addition and relation to this discourse, this knowledge, compared to it and evaluated in relation to it. It also means that in order for a discussion on meaning to become relevant, this discussion must be put in perspective of the present discourse(s) and positioned relative to at least basic notions and theories in the field today.

Hence it will be necessary to, without claiming to give a full account of the theories and discussions of today, give a brief description of the field, in order to put the following discussion in its right perspective.

This chapter will, thus, begin with a presentation of the theories of meaning and interpretation that are used in the thesis, providing both a basic introduction to what meaning is as to hermeneutics and semiotics – two theoretical fields of value for the methodology – and an introductory discussion on the role of the subject and the notion of ‘meaning in society’. Thereafter, sources of meaning in architecture will be presented, based on recent theoretical discourse on what in architecture conveys meaning. Finally, the methodology to be developed in this thesis will be presented in a tentative form, leading on to the following chapter on space and social relations.

This is, however, not an attempt to give full account on either what meaning is considered to be in this thesis or to how it is considered to be produced. That would be foregoing the work and leaping to conclusions. The intention is to introduce terminologies, theories, notions and concepts to which we will constantly return, both to elaborate and to problemise.
2.2 Approaches to meaning

What, then, is meaning? Though constantly discussed and debated, the actual attempts to define meaning³ are rare, and those which have been made often ends up in arguments leading in circles.⁴ To a large degree, this discourse(s) is dominated by theories first grounded in the fields of linguistics and literary studies, which are then propagated into adjoining fields or assimilated into other theoretical discourses concerning meaning.⁵

In traditional theory of meaning, meaning is considered as what is expressed (through language) − or rather what idea that through interpretation is conveyed to the mind. This not to be mixed up with reference which is what an expression or an artefact refers to (what reference an expression or artefact produces). While references can be to concrete objects, meaning is by definition abstract and can only be grasped by the intellect (see fig 2.1).⁶

Another way of putting it; meaning is what something (a work, a word, a sentence) tells us, not what it is telling us about.⁷ In this way meaning also goes further than reference, and is, in a sense, produced by and through it.⁸

![Figure 2.1: Ogden's triangle, developed by Charles Kay Ogden, describing the relation between expression, meaning and reference. (Figure from Føllesdal, Walløe & Elster, 2001) (2.2, 14)](image)

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³ What is meant here is the meaning of meaning ‘in itself’, not how meaning is conveyed or produced or what is ‘meant’.
⁴ Føllesdal, Dagfinn, Walløe Lars & Elster, Jon, Argumentationsteori, Språk och Vetenskapsfilologi, 2001, p. 263.
⁵ Though it is hardly surprising that a discourse on meaning in language can contribute to the discourse on meaning in other fields, as language perhaps more than anything else has to do with meaning, there is within the field of architecture, as will be shown later on, a significant difference in both how this is applied and to what extent a direct analogy is considered valid. See Markus (1993).
⁸ As exemplified by Frege: The reference of ‘the morning star’ and ‘the evening star’ refers to the same physical entity − the planet of Venus − but the meaning of the two are different. Thus several meanings can be tied to one reference, but not the other way around.
As a question of interpretation, however, there are at any given time a number of possible meanings and references produced from an expression or a work. This is not to say that any meaning is as relevant or that any interpretation or understanding is as good as another. As Paul Ricoeur argues, though “a [work] means all it can mean”, the primary meaning is that which combines most references that is relevant in the context into a coherent whole that, in the long run, is given precedence.  

Another issue that is raised is the question of what is meaningful. This problem was perhaps one of the most important parts of the general discourse on meaning in art and architecture in the era of post-modernism, though it is not always spelled out, leading to a number of different philosophical and analytical approaches to be attempted. However; even though any number of aspects could be named to be meaningful, it is not an entirely arbitrary choice, as there are in a given time and context cultural and social factors, identities and ideals, structures of power and bonds etcetera that govern what is valued as important and what is not. Based on this, this thesis will be working under the hypothesis that meaning – what is meaningful – is about telling us something about the world, how to relate to ourselves, others or the other, about ideals, rules, power, bonds, knowledge or discipline – in short, that the meaning tells us something about social relations.  

Defined in this way, what architecture tells us still leaves the question of who this ‘us’ is. For purposes that will become apparent, this will be dealt with after an introduction to theories of importance to this thesis on meaning and its production – namely hermeneutics and semiotics. The former dealing with meaning in and of works – in this thesis primarily represented by Paul Ricouer and focused on interpretation and understanding – and the other dealing with meaning through the concept of signs in a tradition largely founded by Ferdinand de Saussure and in this thesis represented mostly by Umberto Eco.  

Hermeneutics  

Hermeneutics is a well developed theoretical field concerning the interpretation and understanding of meaning in and of works, and provides valuable theories and approaches for this thesis. In short, hermeneutics is about interpretation and understanding – or, in the words of Paul Ricoeur, “[hermeneutics is] theories and methods that govern exegesis, i.e. interpretation of a given text or collection of signs which can be regarded as a text.” What is to be understood and interpreted is meaning, what makes the studied text or phenomenon meaningful.
In its origin, hermeneutics dealt with texts and to some extent with works,\(^{28}\) and was focused on understanding the intention of the author – this partly as it was much developed as studies of laws or the bible. Though its roots can be found in ancient Greece, it was not until the seventeenth century the term hermeneutics was coined and established, and it was first with the writings of Dilthey in the nineteenth century that it was widened to encompass studies for understanding actions as well as persons and works.\(^{29}\)

One thing that must be made clear is that hermeneutics is a term for both the process of interpretation and a method thereof. As for the role of hermeneutics in this thesis, the focus will be on the former – hermeneutics as an understanding of how meaning is produced. As such a model, hermeneutics does not necessarily stand for a conscious or intentional act of interpretation but is also a theory of how we constantly (re)produce meaning from the world surrounding us.\(^{30}\)

The theories, however, are to large extents the same regarding both. Central and recursive themes in most hermeneutic theories, and problems that need be solved or dealt with, are questions regarding the role of the author, the intention of the work, the society in which it was produced, the public to which it was aimed, the question of the ‘subject’ interpreting the work and the process of interpretation. In order to give structure, they will be presented as questions of the process and questions of the who and what – the role of the author, the work and the subject.

**The Hermeneutic Circle**

The Process is in hermeneutics understood mainly through the hermeneutic circle. This ‘hermeneutic circle’ exists in a number of different iterations and is often redefined each time it is referred to, focusing on different aspects of the interpretation process. In large, however, the different iterations can be gathered in a few principally different versions.\(^{31}\) This thesis will primarily be using two.

Firstly, the hermeneutic circle as the interplay between the part and the whole – the meaning of a work can not be understood without understanding the meaning of the parts, while the meaning of the parts can only be understood in relation to the meaning of the whole. The understanding of both is then continuously built up in a spiral where each step of increased understanding of one contributes to the understanding of the other.

Secondly, the hermeneutic circle as the interplay between the work and the ‘reader’ – how what is presented by the work works together with our own position and preconditions in the production of meaning. The question here is to what degree and in which ways the meaning we produce as we read (interpret) a work is related to ourselves and our opinions and ideals, and to culture, history and context. Meaning is, however, not purely subjective, which will be shown in the following.

**The world in front of the work**

As for the roles of author, work and subject, these can be approached using

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\(^{28}\) ‘works’ here meaning e.g theatre plays, lyrics et cetera.

\(^{29}\) The origin of hermeneutics is from Literary and jurisprudence studies, but was through the works of e.g Friedrich Schleimacher and Wilhelm Dilthey widened to encompass the much broader field which it is covering today. Föllesdal, Walløe and Elster, (2001), pp. 129-134.

\(^{30}\) Ricoeur (1982).

\(^{31}\) See Föllesal, Walløe and Elster (2001), pp. 145-146. They present four versions of iteration.
the terms of Paul Ricoeur – as these terms also touch other aspects connected
to the questions of these roles. This means treating the author, the work and
the situation in which it was created and to which it was aimed in terms of *the
world behind* and *the world in front of* the work, and the role of the reader and the
work in terms of *appropriation* and *distantiation.*

The world behind the work, a term encompassing both the intention
and/or life of the author, the society and history leading to the production of
the work and the society to which it was directed, is, according to Ricoeur, of
lesser importance. It can explain why a work was produced, why the work
says what it says and what it was intended to say. Knowledge of these factors
can help in understanding the work, and may very well contribute to its mean-
ing, but are not the most important factors for what the work means. In this,
he shares the same view as most linguistic theoreticians, contrasting text and
spoken dialogue. Once language shifts from being spoken into being written
text, the author is distanced from the text and no longer has control over its
meaning. The text ‘in itself’ then carries a meaning, regardless of whether it
expresses the author’s intention or not. The same can be said for the situation
in which the work is produced. Once the words are on paper, there is no
saying that this situation will be known to the one reading the text, and thus,
there must be different questions whether one wishes to seek the intention of
the author or the meaning of the work.

What instead is the source of meaning in the work, according to
Ricoeur, is the *world in front of the work*, the world which is disclosed to the read-
er in the reading. What Ricoeur argues, is that the work (the text) presents
(discloses) a ‘world’, a totality, rather than a message from ‘the author’ - a
world that by necessity contains more than is explicitly stated in the text. This
is something which we start (re)constructing from the first sentence of a text,
and through which we organize individual sentences into a comprehensible
whole – and which is also constantly re-evaluated and reconstructed as new
‘clues’ to its construction are added through reading the parts. It is also in

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32 “To understand is not to project oneself into the text; it is to receive an enlarged self from the apprehension of
proposed worlds which are the genuine object of interpretation.” Ricoeur (1982), pp. 182-183.
33 This when discussing either ‘everyday interpretation’ or ‘what the work says’. The aim can,
naturally, be to understand the *world behind the work*, or parts of it (e.g. the intention of the
author, see above).
35 See e.g Derrida, Jacques, *On Grammatology*, 1967 – Derrida is perhaps one of the theoreticians
who have explored this difference most.
36 In so far as he cannot control the interpretation performed by the reader – as in dialogue,
where the one sending the message can control how it was received and consequently
either add or adjust what was said to explain further based on how the message was
received.
37 This is not to say that he claims the intention of the author to be of no interest. We also
have the possibility that the one interpreting is searching for just this. But – this will then
lead to an interpretation of a perceived intention, which is not necessarily the author’s real
intention. One can not, either, be sure that the author is clear over all intentions him- or
herself. As a result of this, at times the goal of hermeneutics has been said to be ‘to
understand the author’s intention better than he does himself’. Odman (1994).
38 ‘Text’ in the above can in effect be replaced by ‘work’, as the same discussion can be applied
to any artificial product – once it leaves the hand of the author/creator, its use and
meaning is in large out of the creators control.
39 This is also to say that for Ricoeur, meaning is something that happens. The meaning does
not exist outside the interpretation or conceiving but is a part of that very process.
relation to this world that we choose which out of several possible meanings of a sentence or a word to give priority. The work discloses a world to us, which carries references and meanings to which we can relate, and from which we create meaning.

Following the reasoning of Ricoeur, it is thus possible to work with describing and understanding the world in front of the work in a to large extents non-subjective manner. Since, while there is no such thing as a correct interpretation of the meaning of a work, there are more probable interpretations – interpretations that take more clues into account, order them into a more logical and coherent world and which make the most sense out of them.\(^\text{41}\)

Going further, Ricoeur questions the focus on the subjective in the hermeneutic process. He claims, in contrast to for instance Gadamer or Heidegger, that in the reading and understanding of a text we do not project ourselves and our own ideas into the text, but rather place ourselves in front of its world – distance our ‘selves’ from our subject\(^\text{42}\) – after which a process of appropriation begins.\(^\text{43}\) “Appropriation is the process by which the revelation of new modes of being […] gives the subject new capacities of knowing himself.”\(^\text{44}\)

In these ways, he tries to lift the hermeneutic circle from a subjective to an ontological plane, and to show that the act of understanding is more logical and less historical than what is often claimed.\(^\text{45}\)

\[\text{Figure 2.2 – The hermeneutic process of interpretation and appropriation according to Ricoeur in a simplified figure.}\]

This does not mean that to some extent analysis of meaning does not end up being connected to analysis of what something means to someone. It places this ‘someone’ on a more analysable level, so that one can discuss the work and the ‘reader’ and their interplay without necessarily ascribing subjective thoughts to the ‘reader’.

**Semiotics**

The second tradition, semiotics, represented by for instance structuralist and poststructuralist theories\(^\text{46}\) with theoreticians such as Barthes, Eco, Foucault\(^\text{47}\)

\(^{41}\) Ricoeur (1982), pp. 175-176.
\(^{42}\) He describes this process as a play between the reader and the work, stating that “In play, subjectivity forgets itself; in seriousness, subjectivity is regained.” Ricoeur (1982), pp. 185-187.
\(^{43}\) This in contrast to traditional hermeneutics, wherein it is often considered that we project ourselves and our ideas onto the work, and thereby integrate them into the meaning of the work. To this view, in which the interpretation in large is an extension of existing beliefs of the reader, Ricoeur attempts to set up another less subjective understanding of the hermeneutic process.
\(^{44}\) Ibid., p. 192.
\(^{45}\) Ibid., p.184.
\(^{46}\) Leach, Neil (1997).
\(^{47}\) Note that Foucault himself does not like to be categorized in such a manner, though he is often considered a poststructuralist. Regardless of whether he is a poststructuralist or not, however, his writings are important for poststructuralist theories. Foucault, *The Order of Things*, 2003, foreword (Foucault, 2005a).
and Derrida, mainly works with the similarities between language and other systems both as a tool and as a model of understanding and analysis. As stated earlier, the principles of this discussion were in large set out by Ferdinand de Saussure in his linguistic theories. Based on the concept that language is primarily a system of signs, he continues to analyse how these systems and signs are constructed.

Though here by necessity simplified, there are two basic principles for his systematisation of language – that of the relation (and difference) between *signifiant* (or signifier, that which means) and *signifié* (or signified, that which is meant) and that of the relation (and difference) between *langue* (the structure or system of the language) and *parole* (the language in its everyday use or individual utterances). The important question for linguistic studies, Saussure claims, is the question of *langue*.

The main question regarding the *langue*, then, is to understand the structure and system of the signs - signs being composed of the unity of *signifiant* and *signifié*. Firstly, both the *signifiant* and the *signifié* are defined by differences – or perhaps more correctly, by their relative position in the system of signifiers or signifieds and how the signifier or signified in question is differentiated from the others. For instance, as far as language is concerned, dogs are dogs primarily because they are not cats, cows, chairs, tables *et cetera*, not because any attribute common to dogs. This does not mean that common properties of a concept (e.g. all dogs having four legs and so on) is denied, it means that the sign ‘dog’ gains its identity through the ways in which it is different from other signs – which may very well be what common attributes they share that *other signs do not share*. Secondly, the link between a signifiant and its signifié – in language – is arbitrary, and not based on any other condition than social practice. There is no intrinsic connection between the two and there are no set of universal concepts for which language develops a nomenclature. Saussure’s point is that we create the concept in the signifying of it, or perhaps more accurately, that both signifier and signified are constructions, made on basically arbitrary choices on how to structure the world.

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48 The two divisions are often presented in the other order, though it is more logically coherent to see the second (*langue – parole*) as a result of the former (*signifiant – signifié*). Culler, Jonathan, *Ferdinand de Saussure*, 1986.

49 Culler (1986).

50 As a simplified example from architecture, it could be said that if a library is a library primarily through housing books, it is so because *other buildings do not primarily house books*. Otherwise, the concept of library would not mean anything, and neither would the housing of books contribute much to the meaning of any specific building, (though it would be built into the meaning of ‘building’). In this way, use also identifies meanings through relations to other possible uses.

51 Though Saussure claims that the approach is valid for analysis of meaning in any field, he focuses his discussion on language, and it is in *language* he states that this relation is entirely arbitrary (i.e. what word corresponds to what concept). Regarding other fields he is less determined, something that will be handled later on. Culler (1986).

52 This does not mean that he denies that there is some logic to what signifiers and signifiers exists – for instance it is reasonable to assume that any society in contact with such needs a term for masses of water constantly flowing in coherent stream in a landscape – i.e. a river or a stream. His point is that the definitions and subdivisions of this concept seems to be arbitrary for each language, where for instance in English its based primarily on size (*river* versus *stream*) while in French its between streams of water leading to the ocean and those not (*flûve* versus *rivière*).
Thus, meaning is a social product (or a social fact\textsuperscript{53}) – and is first and foremost not the result of an individual interpretation but a collective agreement on signifiers and signifieds, and what is most relevant are the distinctions and relations that have been endowed with meaning by a society.\textsuperscript{54} As such, it changes over time, and analysis of meaning (as in what something means) is by necessity a \textit{synchronous} analysis – i.e. a sign has a meaning in a specific time and culture, and both the meaning of that sign and what sign carries that meaning, change over time.

This process of signifying is often referred to as \textit{codification} – how we, both as individuals and as a society, inscribe meaning(s) in artefacts, words and actions, mainly through our use of them.\textsuperscript{55} Or in Saussurean terms, how we through \textit{parole} define what \textit{signifiers} to use and what we use them to \textit{signify}. Thus the codification is a continuous process where use and denotation produces and reproduces each other\textsuperscript{56} in the \textit{durée} of social life.\textsuperscript{57} The question, then, would be how this process looks and through what means one can understand and analyse it, and if there are regularities in the codification process that can be analysed in a stricter manner.

At this point, it can be of relevance to say that already for Saussure, the arbitrary relation between \textit{signifiant} and \textit{signifié} is most prominent in language, whereas applied to meaning in other fields – especially regarding physical phenomena – he recognises that there ought to be limitations to what the signifiant can signify, there are constraints on what meanings a physical object (or a physical place) can convey based on their physical form.\textsuperscript{58} It is along these lines that this thesis is working – exploring how the possible meanings are \textit{constrained} or \textit{promoted},\textsuperscript{59} in architecture. And, more specifically, how spatial systems work as such constraining and promoting factors, and to develop a methodology for understanding and analysing this.

One weakness in Saussures theories, and also the field where his theories are of less importance, is in the field of syntax – that is, in the rules and structures that govern the combination of signs into meaningful sentences. And while Saussure considered sentences primarily as \textit{parole}, governed by individual choices of a more or less arbitrary nature, it has later been shown how syntactic properties of the language reasonably are part of \textit{langue}.\textsuperscript{60} That syntactic properties are part of what structures meaning is of importance for the discussion in this paper, as will be shown later on, and is something that sets the boundaries for what meanings can be codified to what buildings.

\textsuperscript{53} As discussed by e.g Durkheim and the functionalist/structuralist tradition in sociology. Boglind, Anders in Månsson, Per (ed), \textit{Moderna Samhällstexter}, 2003, p. 30.

\textsuperscript{54} Culler (1986).

\textsuperscript{55} Eco (In Leach, 2001).

\textsuperscript{56} Barthes (In Leach, 2001).

\textsuperscript{57} “The \textit{durée} of daily life, as lived by each individual, is a continuous flow of activity, broken only (but regularly) by the relative passivity of sleep.” Giddens (1984) p. 73.

\textsuperscript{58} This has in large to do with how it is possible to physically relate to them. An open field can not mean enclosedness, for instance, and neither can it mean height, as can not a jail cell mean freedom for the one locked in it. Culler (1986).

\textsuperscript{59} Eco (In Leach, 2001).

\textsuperscript{60} See e.g Chomsky (Culler, 1986).
The Subject and meaning in society

Following this discussion it is time to return to the question of to whom something means, in regards to this thesis. At this point it is meaningful to make a distinction between what could be respectively called meaning in society and meaning for the individual, where meaning in society stands for the collectively produced and agreed upon meaning, similar to meaning in language. What is discussed here is, thus, not how each individual will interpret or understand the object, what the meaning of an artefact is to a specific person, but what meaning the object carries in its social and cultural context and in society as a whole.

Meaning in society is further defined as being about understanding and analysing what architecture says to and about society, how it represents society and how it affects society and social relations. One of the primary concepts being that architectural meaning comes from how architecture (or space) defines, (re)produces and represents social relations. 61 That is to say, what architecture means with regards to culture, society or identity, what architecture tells us about life – about ideals or purposes, about what is important or what is preferred, about how we are to act or live or about our (or someone else’s) position in society. 62 In short, the meaning that herein interests us is the meaning that tells us something about social relations, relations to ourselves, others or the other. 63

This can be done at several levels and in several ways, and also through several steps, as through myths and legends, 64 through metaphors or metonyms, through direct references or through describing or assigning power or importance of the object, the self or the third person. What is primarily interesting in as far as critical analysis of the meaning-in-society of architecture, following the reasoning of Merton concerning the question of sociology, is analysing what could be called the latent meaning – meaning as produced and reproduced by structures and behaviour, not necessarily tied to intentions and not the result of conscious actions or active interpretations. 65 The ability to analyse this lies not only in the question, but in the method used. 66

Architecture as ‘the work’

The reason for the coming focus on the building rather than the individual subjects are many, but the primary one is that this thesis is focused on architecture and how it through interaction with society and people produce meaning – the meaning of architecture understood as the world in front of the work. It also enables us to create a methodology which is primarily based on analysis of the building and its space, and where other investigations are complementary to this rather than the other way around.

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61 The central issue for both Lefebvre and Foucault, but also, in a much more concrete manner, for Bill Hillier and the space syntax theories.
62 In relation to this Lefebvre, for instance, states that that architecture signifies is unquestionable, but that what it signifies is do’s and don’ts. Lefebvre (1991).
63 Markus (1993).
64 Ibid.
65 Merton states that the interesting task for sociology is not understanding the conscious parts of society, nor the functions or phenomenon that are intended and which people are aware of, but the underlying structures and rules that works even though nobody (or most) are not conscious of them. This, he means, is the task of structural functionalist sociology – and the label he uses is Latent Functions. Boglund (in Månsson, 2003).
66 See e.g Jenks, Charles, Modern Movements in Architecture, 1973, The plurality of approaches.
Further, meaning is inscribed in space over time through our use of it, our discussions of it and in it and through how we perceive it, both consciously and subconsciously and is as such not necessarily conceived by everyone participating in its (re)production.\(^67\) Therefore, it is to some extent beneficial to treat meaning as if it existed in the building, this way avoiding long and complex statements at every turn of where the different aspects is (re)produced and maintained.\(^68\)

By now it must be said, that any attempt to ascribe a meaning to an artefact, even as reflected upon by a single subject, is highly problematic, and of course becomes more problematic the more complex the artefact and the references it inspires. This means that any analysis of meaning will be to some extent incomplete as it cannot cover all possible references and meanings produced by the object in question. Thus the question cannot be “what does this [object] mean”, but rather “what is the predominant (or dominant) meaning(s) of this [object]”, or better yet, “what references and meaning(s) does this [object] produce.” The last preferable since the discussion will also be on what the objects being studied says about what is outside of itself – e. g. what a library says about the structure of knowledge. The aim of the methodology herein is, however, not to give full account of meaning, but to explore and develop a field of research and understanding meaning that is hitherto neglected. This said, for the sake of simplicity ‘the meaning’ or ‘what it means’ will mostly be used.

**Concluding words**

So, thus far, meaning can be said to be produced through what ideas and references something conveys to the mind and what of this, in the given context, is meaningful. Thus a building can be said to carry meaning insofar that it tells us something about itself, ourselves or society that is relevant to, and helps us relate to ourselves, others or the other. This either through promoting ideals, creating possibilities and room for action or through restricting or disciplinarian means,\(^69\) describing what is not possible, what is not expected and what is not accepted. Furthermore that it does so through references and ideas, as disclosed to us by the building in its context, and that an important part of how this meaning is produced is through our use of the building or city. That is, meaning as what architecture tells us produced through the spatial form of architecture and our use thereof seen through the filter of spatial systems, set in relation to meaning in society as a whole.

And though the aim is to show that there are constraints as to what meanings can be inscribed in or produced by architecture as a result of its spatial configuration, meaning is inherently social and as such will have to be treated in relation to to whom it means something to and what the social and cultural context is.


\(^68\) This is also a result of the reasoning of Ricoeur, see above. Another reason has to do with the nature of one of the main sources of meaning, namely identity. Something that will be further elaborated later on.

2.3 Sources of meaning

Having established a theoretical framework for the methodology in as far as how meaning occurs, there are still a few pieces missing. When constructing a methodology for analysing meaning, it is important to remember that meaning does not just occur out of nothing; it is produced from something – e.g., language – from which references and ideas are conveyed to our mind and produce meaning. Thus, before moving on we need to discuss what this 'something' is, *through which means* meaning is produced. We need raise the question of how this is to be transferred to meaning in architecture - how does architecture work as e.g. a text or a sign, what parts, elements, perceptions or means are active as producers of meaning(s)?

This is a widespread discussion, one of the most important in postmodern architecture and theory,\(^{70}\) as well as phenomenology and critical regionalism through writers such as Venturi, Bachelard, Norberg-Schultz and Frampton, as of importance for both structuralist and perhaps more so post-structuralist debate, e.g. in the writings of Barthes, Eco and Foucault. It is also one of the cornerstones in the discussion of Henri Lefebvre in his *The Production of Space (Production l’espace)*. This is a still ongoing debate and experiment in practice on what in architecture conveys meaning – if it is historical reference, detailing, decoration, richness of form, space or context. What these debates or projects attempt is, in a simplification, to find or explain what the source of meaning in architecture is. What should be considered a *signifier* and what it in turn *signifies*.

As for analysis based on linguistic theories, this discussion reaches from a direct analogy, trying to *read architecture as language*,\(^ {71}\) letting elements represent words and their combination constitute sentences\(^ {72}\) to, as Lefebvre states it, that architecture surely can be analysed using linguistic means, but that it is not to be read as *text* but as *texture*.\(^ {73}\)

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\(^{70}\) *Post-modern* here used in a sense similar to that of Leach (1997) – theories that primarily position themselves in opposition or as critique to the modernism agenda.


\(^{72}\) This approach lead to the notion of loss of meaning with the fall of the classical orders. It is to some extent true that each element of the order was encoded with meaning similar to words, and that thus they could be combined into something reminding of sentences – and thus that by removing this cultural code this option is no longer available (or at least not as easily). Attempting such direct analogies has been proven insufficient and perhaps even a bit naïve, and other approaches have rather quickly replaced them. See e.g. Forty (2000).

\(^{73}\) Lefebvre (1991).
As a complicating factor, however, architecture perhaps more than anything else is at the same time significant and signifié, and when dealing with meaning in architecture one must be clear of which aspect is under scrutiny and how they interact to produce each other. For example, a library is one significant of the word ‘library’, or the specific name of the library, but is also a signifié of something. In a simplified manner, it used to be ‘a building which housed books’, but with the recent development has turned more into ‘a place for the storage and exchange of information’.

At this point in the discussion it is relevant to briefly describe the landscape of aspects that has been considered sources of meaning in architecture, and through this attempt to further define and position the preconditions for this thesis. It also sets a background and frame of sources to which we will continuously return once the methodology is applied.

Not aspiring to cover all possible references (ways of referring) or sources, the following is an attempt to grasp some of the most important and briefly discuss their role and importance, first individually and then in some concluding remarks. These themes will be to some degree overlapping, since they are not a result of dividing the concept into separate distinct discourses but based on different ways in which meaning is or has been discussed in architectural theory or sociology in recent years.74

Function and type

The reason for treating function and type at the same time is that they stand in a mutual relation and dependency to each other through large parts of architectural history and discourse. Type emerged as a ‘concept’ early in history, though perhaps not under that label, and a basic classification into types is inherent in the classical system of architecture since antiquity.75 Over the course of history, two major categories of ‘type’ have developed – the functional type (e.g. schools, banks, offices etc) and morphological type76 (e.g. ball-shaped buildings, centrally planned buildings, buildings with courtyards etc), and large parts of the discourse have been concerned with the relation between them.77

Thus, type has had a very close connection to function – to the degree of often turning into functional labels. Type or function meant predictable formal decisions and defined spatial structures and forms of expression, turning the type into a ‘shorthand’ for a rich social and cultural description78 as well as an important source of meaning.79 When designing a bank or a museum, there has existed codes and forms, spatial structures and aesthetic expression that were included and presupposed once the type was decided. Thus via the notion of

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76 The discussion on morphological type has evolved into its own theoretical field, type-morphology, which have several branches. Even here, though, much of the classification is concerned with morphological types of functional types. Whitehand, J.W.R., and Carr, C.M.H., Typological Process and design theory, 20th century suburbs, or Forty (2000).
79 In many ways analogous to role, important to sociological discourse (Durkheim, Parson etc. (from Månsson, 2003)) – something which will be further elaborated upon later on.
type, function and meaning could be deduced. A bank was a bank, recognisable through its morphological type, informing us of its role in society, its status and how we should relate to it.

With the advent of modernism, however, type and the corresponding aspect of function turned less and less important for design decisions, and thus were no longer adequate as a way of organising experience into a stable structure.\(^{80}\) For many, this was a reason for architectures ‘loss of meaning’, and attempts have been made to remedy this by reintroducing type in architecture from the 1960s and onwards, by such as Aldo Rossi, Anthony Vidler and Alan Colquhoun.\(^{81}\) And even though types are still present in discourse, especially in how we classify and conceive architecture – we still use function-types as labels for new buildings (e.g. bank, school, stadium, office) – the labels connection to its formal or spatial expression is if not nonexistent at least very loose. In Lefebvre’s terms, types are as most important in representations of space – how space is conceived and conceptualised by planners, scientists, urbanists and so on.\(^{82}\)

It has also within the architectural discourse been proven, over and over again, how loose the connections between form and function is,\(^ {81}\) and if the intended function says little about the end-result form, form says even less about the function of the building unless social or cultural codes and rules cause such a connection to exist. Note that in this discussion, function is not the same as use, but rather an overall function or purpose of the building.\(^ {84}\)

One can not say, however, that type is irrelevant. There are still connections between formal expression, function and meaning, though perhaps more elastic and temporal, and types still do exist (in various degrees depending on function and location) such as the glassed office building and its connotations and denotations, or the villa or shopping mall. ‘School’ is still a ‘type’, something that is referred to, and in many ways the majority of schools still adheres to a small number of morphological types or principles of design, creating a frame of reference to which individual buildings are compared and related when interpreting them, and thus are a source of meaning, even though the direct connection between morphological type – or type as a set of formal, functional and spatial rules and conventions – and meaning is no longer present.\(^ {85}\)

Following this reasoning, Umberto Eco claims that the primary source of meaning in architecture is the way in which it is supposed to be inhabited,\(^{86} \) the buildings social type or function. A reasoning also applied to architectural elements. In this, Eco states a looser relationship between function, type and


\(^{81}\) Colquhoun has suggested that type provided the means through which structuralism, as a theory of meaning, could be translated into architecture. Ibid., p. 311.


\(^{83}\) Considering function in the meaning of performing a ‘purpose’ or ‘role’, which is the most usual in architecture (See Forty, 2000) and is the actual definition in sociology (Männson/Durkheim etc). The problematic in this traditional approach to use has been both convincingly argued and effectively shown by Hillier who addresses function in another way, as will be presented in the following. (Forty, 2000, Hillier/Hanson, 1984, Hillier, 1996).

\(^{84}\) The problem of the term ‘function’ will be further developed below.

\(^{85}\) As Lefebvre points out, even though there is no ‘[...] one to one or “punctual” schema between social actions and social locations, between spatial functions and spatial forms’, this ‘[...] structural’ schema continues to haunt our consciousness and knowledge (savoir).” Lefebvre (1991), p. 34.

\(^{86}\) Eco (in Leach, 1997).
meaning, as being coded through the process of use. He is still, however, discussing the intended use, even if this intended use is something that may vary through use over time.

**Function and use**

As could be seen above, function is in many ways a problematic term, why its meaning must be further discussed. Introduced in structural sociology, it is a concept first found in biology, and comes from the Latin term *fungus*, meaning to *perform, execute, or accomplish something*. It is thus tied to intention, purpose or role – the function of a school could, for instance, be said to be to execute the education of children. Function is somehow institutionalized and is tied to a role in society or in an organization. This origin of the term can be traced in how both designers and analysts relate to function – e.g. how it is treated in the majority of functionalist works – and more often than not the term’s connotation to role and purpose leads the reasoning astray.

Thus, function becomes a problematic term. Being – for better and worse – closely tied to idea, programme and role, function seldom is a term for the way people act and use the building in everyday life. Neither is it necessarily tied to how the function is performed, its results considered in a broader context or even if the intended function is actually what is the end performance.

Without making the herein proposed distinction between the two terms of use and function, extensive discussion on the relation between use and meaning can be found in structuralist and perhaps even more so in post-structuralist discourse. To a large degree, the primary purpose of meaning is, by for instance Eco, considered as informing us about how to use an artefact, and further, that every usage of an artefact codifies the meaning of that use to the artefact in question. Or, as Barthes says, “as soon as there is a society, every usage is converted into a sign of itself.” A theme in all its simplicity very clearly explained by Umberto Eco in *Function and sign: the semiotics of architecture* regarding the meaning of a spoon.

The meaning of the spoon, Eco claims, is codified through its use, as it promotes a certain way of eating, it also, over the course of being used, starts to signify that way of eating – leading it to refer to that way of eating also when not being used.

Eco’s reasoning, however, is concerned primarily with codification of artefacts and architectural elements – stairs, windows, porticos, and so on – not with the codification of whole works of architecture – the ongoing inscription of meaning into a specific building. The closer his reasoning reaches the scale of the building, the more he turns from the concept of use to the concept of function (see above). The reasoning is also still very closely connected to type. The *type* spoon is discussed, and the meaning of the *specific* spoon is not

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87 Boglind (in Mänsson, 2003)).
88 This is, though in different terms, part of Hillier’s and Hanson’s main argument in *The social logic of space on the failure of functionalism*. Hillier/Hanson (1984).
89 Even when trying to show function as a term for use, forty ends up with a very short description, and even there it is not clear in which way ‘use’ is different from the other meanings of function he presents – it is more an example of a reduced scale of the same concept of function as programme, though seen as something for individual spaces of a building, See Forty (2000), p. 174-195.
90 Barthes (in Leach, 1997).
91 Eco (in Leach, 1997).
treated at all. In the case of an object such as a spoon this is perhaps the reasonable thing to do. With artefacts as complex and individual as architecture, however, it is not as obvious that the use of one building necessarily connotes the use of another. That being said, the reasoning around the spoon and its continuous codification through use illustrates a possible way to study use as different from function as it is related to the production of meaning.

At this time a third possible way to approach meaning in architecture through its use will be brought up – one going through what could be more likened to behaviour. As a field of study mainly developed in the space syntax theories, what is the focus here is how people act and make use of architecture, where they go and what routes they follow, where artefacts or institutions are located and the emerging patterns of interactions between people, artefacts and the building, analysed without the filter of function or assumptions about role or programme. This, however, is a reasoning that will be further developed later on, since it is closely related to social relations and social space.

As far as this thesis is concerned, function will be treated just as in its original meaning. And thus we must also discuss use as a source of meaning. Note that I do not deny that programme or prescribed use has impact on use or meaning. I am merely addressing the problem of function as term for use, since it is tied up with programme and not behaviour.

Aesthetic expression

What is here meant by ‘aesthetic expression’ is a vast field of issues – though with the common denominator of being a result of physical form as experienced and related to society and culture in one way or another. The brief discussion on this herein is not intended neither to deny nor diminish its role in the production of meaning, but rather to leave that discussion to where it can have its proper place and depth. Still, it is important to remember that one significant, and unavoidable, source of meaning in architecture is aesthetic experience – what emotions the building inspires, what references to art, culture and not the least architecture in itself it produces, what proportions, materials, colours, dimensions and expressions are used in order to give form, character and shape to the building.

At first, it could seem that the importance of aesthetic expression has been radically reduced since the classical or romantic era, but this is not necessarily true – rather, aesthetics grew more important with modernism. Aesthetic expression could be said to be the chosen design of the building, what it is aimed at expressing. In this way, the focus on function in the modern era can be seen rather as an aesthetic focus than a focus on the actual use of the building – the expression of function and functionality was more important than the function itself, which is, according to Hillier, part of why functionalism ‘failed’ in its aspiration to provide an architecture supporting function.

What has changed, however, is that there are less aesthetic rules in both architecture and art as a result of the modern movement. The proportions,

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92 e.g. Hillier/Hansson (1984) and Hillier (1996).
93 As the term function is often used by Hillier et al within space syntax theories. It can also be understood through terms like spatial practice (Lefebvre, 1991) and social practice (Giddens, 1984).
orders, rules and guidelines of classical architecture should not be overestimated, but they were an aesthetic foundation from which architecture was produced and on which grounds it was evaluated. They provided a cultural and aesthetic background to which every work could be compared and evaluated, and thus a rich source of references and meaning. Though indeed partly constraining architectural freedom they, hence, also provided a rich plethora of myths, legends, meanings, implications and other cultural and historical references from which architectural meaning could be produced.  

Similarly, the symbolism coded into the architecture of gothic churches – its windows, statues, arches, images and organisation – was vast cultural source of meaning in its time, of which we can understand some today, and the average visitor of the church only know a small portion, and actually refer to even less. At the same time, new meanings, references and myths are produced in society, codifying new meaning into the statues, the arches, the paintings and the stained-glass windows. 

This is not to say that their aesthetic expression does not carry meaning today, though it does not, perhaps, do so in the same degree and in the same sense for most people. The point here is not to suggest a loss of meaning with the fall of the classic era, but rather to point out that meaning in the sense of aesthetic expression is heavily reliant on culture and references, and that it is under constant change.  

It must also be said; that social space and spatial systems to a large degree are part of the aesthetic expression or form in architecture, and parts of the ways in which it produces meaning is through its aesthetic implications or results. There is also a thin line differing aesthetics and ethics, which further complicates any attempt to single out or avoid an aesthetic discussion whenever architecture and meaning is discussed – or when discussing architecture at all, for that matter. As a form of art, be it functional art or fine arts, architecture is always a result of choice and prioritisation, and unavoidably an aesthetic product.

Social and cultural discourse

Social and cultural discourse, in the sense it is used here, means understanding architecture through language, as different from architecture as language – in what ways we talk about architecture, what words we use and what approaches we take as well as what we say about it. Discourse is in this case used to signify the discussion on architecture, both relating to individual buildings and architecture in large – thus encompassing all from the simple conversation at the breakfast table to debates, essays or scientific papers or theoretical theses on architecture. Actualised by two recent works – Words and Buildings by Adrian Forty and Buildings and Language by Thomas Markus and Deborah Cameron – the ways in which discourse both generates architecture in the phase of production and in which it is understood and interpreted is highly dependant on language. Meaning is, states Markus and Cameron, primarily produced through language, and even other sources of meaning are interpreted through the mediation of language. The two works have different approaches, addressing the two main issues of the relation between architecture and language.

96 Markus (1993).
97 Lundequist, Jerker, ”Arkitektur; etik = estetik”, 1998.
Forty makes an effort to build a dictionary of modern architecture, and in this show how language and terminology was and is a tool for producing architecture and for developing architectural thought. It is not, for instance, a coincidence that words as *space*, *function*, *simple* and *form* appear with the advent of modernism. They both enable and propel the development of the modernistic conception of architecture.\(^{100}\) This is further proven by the post-modern critique of modernism, which to a large extent is performed by questioning its terminology.\(^{101}\)

Language and the terms we use, as shown not the least by structuralist theories, is part of how we organise the world and how we relate to different phenomena, both by setting things in relation to each other and by defining what differentiations are of importance. Through the course of Forty’s work, it becomes apparent how close the connection between the architecture produced and the linguistic terms or tools through which it is thought is.\(^{102}\)

Markus and Cameron, on the other hand, studies this relation through *discourse*, the discussions, writings and communication on architecture in everyday life, the architects office, papers, publications and other writings. They show how architecture, as a collective product, is produced and interpreted through communication and further, that this communication – despite the number of drawings and pictures used – to a very large degree is performed through language.

Thus, apart from structuring the world and defining concept or priorities, language is the primary means of communication, both in the production of architecture and in any understanding of a work of architecture. The meaning of architecture is produced through how it is discussed or communicated – something especially important if the discussion is on architecture’s or spatial systems’ meaning in society, and this, states Markus and Cameron, is done through language.

### Social relations and social space

An important source of meaning in architecture, and an important part on the discourse on architecture, is how it represents, describes or implies social relations – either it is seen as relations of status, of belonging, of identity, of roles, of importance, etcetera. As a social artefact, the ways in which architecture is related to social relations is manifold, and is the focus of many discussions on architecture, partly through the discussion of *aesthetics* and *ethics*, but also on its own merits. In e g Foucault’s analyses of society, space has a central role – not only as a representation but as a means through which power is exercised and mediated.\(^{103}\) Be it an exercise of power or not, there is still, as Thomas Markus puts it, “[…] no other class of object which through the production of material forms purposefully organises space and people in space.”\(^{104}\) Thus one of the most significant characteristics is how architecture is related to social relations through space.

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101 See for instance Norberg-Schultz and other phenomenologists’ critique of *space* and subsequent replacement of it with *place* or the shift in focus from *function* to *meaning*. Leach (1997), Hays (1998), Nesbit (1996).
103 “Foucault’s various discussions of the origins of disciplinary power demonstrate a persistent concern with temporal and spatial distribution.” Giddens (1984), p. 145.
104 Markus (1993), p. 27.
I have already discussed at some length the importance of social relations in the production of meaning, and hence, in as far as space produces, reproduces, represents or defines social relations it is vital to understand how this is done. This, being perhaps the central focus when applying the methodology in this thesis, and also the most important source of meaning when discussing performatve meaning, will not be handled here but in chapter five. The purpose for the moment is to introduce the line of thought, and the concept of social space,\textsuperscript{105} which will be further developed and discussed in the following chapter.

The reason for referring to social space instead of ‘space’ in general is the focus on space as a social entity – as both a result and a means through which social relations are both expressed and (re)produced, and which is based on primarily social factors. The term social space is central to both Lefebvre and Hillier, and as its basic concept they both mean space defined by and defining social relations – space as a product of and a producer of social relations. What is important here, is that social space is not necessarily equal to physical or Euclidian space, but is, for both Lefebvre and Hillier defined by its social properties and potential. Social space is lived space, space as it is used by people in society.\textsuperscript{106}

Further, an important part of lived space is interaction and exchange, the (re)production of social relations performed in both active and passive communication between people co-present in space. As Giddens describes, social relations are developed in a context, be it active discussion or bodily gestures or facial expressions, and this context, to a large degree, is space.\textsuperscript{107} Such social structures are primarily existent through our actions – in a way, social structures and relations are performed rather than statically existent. Thus, as social relations can be called performatve, so could the meaning embeded in them be called performatve meaning.

Spatial properties or situations of control, co-presence, co-visibility, distanciation, differentiation or relations, thus, are part of power structures (e.g. Foucault, Hillier), social relations (Hiller), reproduction of social practices (Bourdieu, Lefebvre) and serves to codify architecture with meaning (Markus), at the same time as it (re)produces meaning in society. Thus social space is about social relations – be it through Hillier’s or Lefebvre’s perspective.

**Role and identity**

Type and function, or, in sociology, role, are ways to meaningfully understand people, buildings or artefacts, to describe their purposes and relations as well as their position in society. As such, they have also been useful for the understanding of meaning. These concepts, however, have in many ways grown less

\textsuperscript{105} The use of the term social space could be seen as problematic, as it in use in many different ways in different theories or contexts. The use of it in this thesis, however, is what is presented within the thesis and is based on the discussions of Hillier and Lefebvre.

\textsuperscript{106} Note that even though I here stress the similarities between Hillier’s and Lefebvre’s writings, this is not to say that they say the same thing. What is important is that they have much in common both in outset and in reasoning – something that is often overlooked. The differences and similarities will be discussed at length in the following, and thus will not be further elaborated upon for the time being.

\textsuperscript{107} “The study of context, or of the contextualities of interaction, is inherent in the investigation of social reproduction. ‘Context’ involves the following: (a) time-space boundaries (usually having symbolic or physical markers) around interaction strips; (b) the co-presence of actors, making possible the visibility of a diversity of facial expressions, bodily gestures, linguistic and other media of communication; (c) awareness and use of these phenomena reflexively to influence or control the flow of interaction.” Giddens (1984), p. 282.
important today, something often regarded as causing problems concerning
meaning in architecture,\textsuperscript{108} under reasoning such as “it is no longer possible to
discern whether a bank is a bank from the type (form, formal expression of
function) of the building”.\textsuperscript{109}

If we turn to society in general, a similar tendency is to be found. It is
no longer safe to assume that the ‘function’ or ‘role’ of a person in society is
important for producing meaning and identity for the person in question.
Analogous to the statement above, and somewhat crude and blatant, “it is no
longer possible to discern whether a banker is a banker from the type (clothing,
attributes) of the person”.\textsuperscript{110} This is not because the ideas behind role has
become invalid, but rather because of the way in which role is defined. Role is
connected to social attributes such as being a ‘father’ or a ‘truck driver’ or
‘banker’. Depending on society, such roles are more or less coded with
prescribed or supposed ways of acting and loaded with purpose and ideals – and are to different degrees ‘packages’ for all parts of life including such things
as leisure activities and literary interests. As society today is less built up around
such roles, the importance of role has lessened as source of meaning in society,
being replaced by other factors, other ways of positioning oneself in society
and culture.\textsuperscript{111}

As a result, what today is the primary source of meaning is, according
to Castells, identity. How we define ourselves in society and culture, or how we
identify ourselves, has today more to do with other kinds of social relations. In
a sense, relations of power have grown less important for identity and that the
importance of relations of bonds has grown.\textsuperscript{112} People rely less on prescribed
roles and more on the relations to others and their position in the network of
society; in their identity. While it might sound like that on Castells himself,
what is proposed is not really a change of the primary source of meaning – but
a change of how this source is produced. A change from role in society to
social positioning – but also a change towards individualisation. Roles set you
up as one of many other in the same role, while the situation we have today, at
least superficially, let you choose your own identity more freely and less
dependant on, for instance, where your work. Identity is focused on the
individual, while role is focused on society.

Thus, it can be said that identity has been the primary source of
meaning in modern times, though the way in which we identified ourselves
earlier was more rooted in roles – and speculatively, that roles came much
more as a complete package, including interests, ideals, ways of living and so
on, and served to discipline you as one of the collective. Role was also a
passive acceptance of this package compared to the more active for instance
‘image’ or ‘networking’ of social relations, the latter also being more open for
the individual to make a conscious choice, or to find an identity in which he or
she is comfortable.

It is tempting to bring this reasoning over to the field of architecture –
where role is to a large degree represented by \textit{type} and \textit{function}. While type or

\textsuperscript{108} Markus (1993), Frampton (in Neshitt, 1996) – see also Forty (2000).
\textsuperscript{109} See Markus (1993).
\textsuperscript{110} This is not to say that social status and social group cannot be read from image, clothing
and attributes. The point is that the social role is of less importance and the social relations
have grown in importance.
\textsuperscript{111} Castells (2004).
\textsuperscript{112} Though it is important to note that there is also a change of which relations of power that are
important for the construction of identity.
function is based on a role or a prescribed use, and identifies the building as one of many of similar types, identity focuses on the unique building and the way people relate to it. As tied to the individual building itself, an understanding of identity could very well be a more fruitful course for understanding meaning than function or type, since identity per se incorporates the social relations of people and artefacts in society-in-history to the building. Identity is also a concept containing more of the sets of references and discourses than type, including a processing of many of the above mentioned sources of meaning.\textsuperscript{113}

The discussion above has in large been focused on how relations are created between individuals and between individuals and the building – how individuals produce relations to the building and people through the use of space. This, however, can be turned around, so to view the results from the view of space. The relations and references produced in this way will be, to a large part, connected to the concrete space of the building and embedded in the experience and identification – the identity – of the space, spatial system or building in question. From such a viewpoint, one or several identities is produced by and of the space itself through our use of it, and it is from this identity a large part of the meaning herein discussed emerges. The identity becomes the designated, the reference, to which people attach meaning – its character as a scene for social encounters, interactions and relations.

\textsuperscript{113} This being said, one can wonder if it is possible, and if it in that case is valuable, to try to find a typology based on identity instead of function. Partly as a result of society in large (at least western society) focusing much more on the individual and unique, and having no (or very few) established codes or rules that ties function or type to meaning.
2.4 Meaning as produced in spatial systems

All this said what this thesis is about is meaning produced in, through and by architecture in the process of its use (as it is lived), and developing a methodology for understanding and analysing this meaning. This is not to say that any of the above forms of reference are irrelevant, as they are indeed relevant to such an analysis. The methodology to be developed in this thesis treats meaning as seen through the prism of space, or more precisely spatial systems. The reasoning behind this has been presented earlier, but it can be of value to briefly repeat that social relation and spatial behaviour is affected by and affects spatial relations, and thus they are to some extent readable in each other.\footnote{Hillier (1996).}

\textit{This thesis aims to construct a methodology for the analysis of how space as defined by concrete form, and its effects on use, behaviour and function, both affects the meaning of the building itself and how it produces meaning in society at large.} This naturally in interplay with other sets and sources of meaning, though they will mainly be involved insofar as they can contribute to the understanding of the main question of the thesis. The thesis focuses as much on the production in itself as it does on the meaning produced – in fact, the produced meaning is to a large degree discussed in order to develop the understanding of the process.

How is it then possible to analyse meaning as produced in and through spatial systems? One of the most important points of Lefebvre’s \textit{the production of space} can be read already in the ambiguity of its title. Lefebvre does not simply state that space is a product – such a statement would be nothing new. The title, however, can also be read as meaning that space produces, is a producer\footnote{Remarkably, for instance Forty (2000) claims that the innovation of Lefebvre was that space is produced, leaving out the second two, and perhaps more important, main points of Lefebvre’s reasoning.} – that space is (in Marxist terms) both \textit{product, producer and mode of production}.

Trying to use this triad, how space works in the three roles, as a basis for constructing our analysis another concept emerges as of major importance – distribution.\footnote{Space seen in this way, as it has a systemic character in the same way as the space syntax theory has, also can help in understanding why and how space syntax works – and why it in some situations does not.} How space is distributed (configuratively, access- and accessibilitywise, ownership, size per person and so on), how people, functions and artefacts are distributed in space (their location) and how they are distributed through space (their spatial behaviour or spatial actions) are three principally differ-
ent yet important factors for the production of meaning, and roughly correspond to the Marxist triad of product-producer-mode of production. These three levels of distribution also represent three levels of action, or production, of social space, and to a certain extent represents three levels of power.117

Distribution of space

The ordering of space implies an idea of the ordering of society. Our vision of society and how it is to be ordered is constantly present in the continuous production of social space, the two producing and reproducing each other in mutual exchange.118 Now, although as Jameson states it, ‘[…] it certainly foretells caution in the a priori deduction of social meaning from the internal content of any particular work of art’119 spatial logics, strategies and systems can be seen as both representations of and producers of social relations and social structures.

This means that the way in which space is systematised reflects an idea or intention of how society, knowledge or power should be – or is – ordered (within the organisation or institution the building or system encompasses).120 A highly hierarchical systematisation of space, for instance, suggests an idea of a hierarchical culture (or part thereof), a spatial systems with a large amount of private spaces suggest a high regard for privacy (or repression of the collective, as Jameson points out), and a spatial system with bottlenecks, where the connection between different parts is more or less intentionally concentrated to a few points, suggest a need of control of circulation.121

To introduce alternative spatial structures thus results in the introduction of alternative ideas of social order. As Thomas Markus exemplifies it; ‘The placing of a community of university scholars into a building with the deep, tree-like spatial structure of an institution makes it possible, despite the rhetoric of creative intellectual freedom, to undermine the community’s traditional function by introducing features associated with surveillance, control and absence of communication.’122

Thus, even though there is no such thing as a direct relation between spatial order and social order,123 certain spatial expressions or logics are not possible in certain societies, while promoted in others, and correspondingly, certain social orders are promoted, disrupted or even impossible in certain spatial configurations.

How space is distributed can be studied in a number of ways – configurative distribution of space itself, spatial logic, access and denial, accessibility, ownership, size per person/function and so on. In this thesis, however,

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117 The **distribution of space** is primarily in the hands of the designers and planners, or other persons in power, the **distribution in space** lies the most in the hands of both planners and users, though not much in the hands of visitors, while to some degree the **distribution through space** to a large degree lies in the hands of the users – be they visitors, workers or those living in the building. It will be shown, however, that they all are interrelated and thus the relations between boundaries of power groups and spatial distribution are loose.

118 As discussed from different starting points and in different ways by both Lefebvre and Hillier.


120 See e.g Foucault, Hillier or Lefebvre for different reasonings on this topic.


122 In the case referred to, this new spatial order was introduced in connection with funding of the research, and had very much to do with the contributors’ wish for ways to control the scientist. Markus (1993), p. 32.

123 Lefebvre (1991), p. 34.
I will apply a configurative understanding, describing the structure of spatial relations, of how space is distributed related to itself. This because, as will be shown, there is much to be learned from such an understanding of space that is not provided by others. This can then be said to produce meaning both in how it is perceived—that is, what image of society the system conveys to us—and through what means it does so. This is both a sign and a more complex work.

**Distribution in space**

Artefacts and people exist in space. They are located in space in both an absolute sense and in a relative sense to other artefacts or people. The spatial relation between them in one sense or another demarking their social relation—a of who is the owner (in case of artefacts) or how they are related in importance, status, essence, idea or function. Following, the distribution of artefacts and people in space, and the spatial relation between them, signifies both their status and their supposed use or relation, both to those who come in contact with them and relative to each other. The spatial sorting of books in a bookcase conveys an idea of how these books and what they contain are related. The placement of books in a library does so in an even more complex and determining manner. Depending on their relative placement in space, we are informed of how they are related to each other and which kind of relations are of more importance than other. As a result, the spatial distribution of books conveys both a view of how knowledge and literature—and in the extension the world—is built up, how parts of it are related and how we are supposed to relate to it.

A spatial systems analysis of the relative distribution of literature will tell us a lot of both how different kinds of literature is viewed and valued, but also what values and ideals, and by what reference this creates, the meaning the library in itself produces regarding both the library itself and literature in general.

Following the same reasoning, the distribution of functions, such as ‘copier’ and ‘information sites’, and, in so far as people are distributed, so will the distribution of people participate in this production. In the case of people, their spatial distribution informs both them and others about how their social relations are supposed to be built up. Especially regarding to relations of power. Though this is perhaps more important in the study of e.g offices or institutions, the relative spatial distribution of books, functions and personnel in a library, naturally, signifies a relative status and relation between them all.

**Distribution through space**

Social relations, it can be stated, are related to interaction (or non-interaction) of some kind. Interaction that primarily happen in space, and which at some level requires co-presence or even co-awareness. The driving force behind

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124 As presented by e.g by Hillier/Hansson (1984) and Hillier (1996).
126 See e.g Markus (1993).
127 See Below, chapter 5 and 6, and Markus (1993).
128 Since in these cases, there is a ‘planner’ or similar function deciding where people are supposed to be, and who sits where et cetera.
co-presence and co-awareness, what makes it possible, is movement and being. Movement is required – or a prerequisite - for interaction to take place. This is especially true for interaction with new people, places or groups. It is also to a large degree through movement and being, and routes and patterns thereof, that patterns of relations are built up between for instance people and buildings in everyday life.

When discussing this it is important to remember that the exchange of meaning, values or ideas does not necessarily have to be conscious or an active process. There is something in the simple process of meeting or non-meeting that creates meaning. Actions, behaviour, clothing, codes – separated or integrated, accessible or closed, mono- or multicultural, meetings and exchange, few or many groups of users (or individuals). It all produces a meaning – both for the users and on a more general level of space. As Giddens states it; “The fixity of social or institutional forms does not exist in spite of, or outside, the encounters of everyday life but is implicated in those very encounters”. In a sense, we can talk about performative meaning – meaning as produced by how the building and its inhabitants perform in mutual interplay – analogous to social relations being performative structures. Though most easily applicable on distribution through space, this term also includes the above – distribution in and of space is also, in a sense, performed. Something that will be made very clear in the discussions to come.

Thus the patterns of use, or spatial behaviour, produce a meaning of space. A space, or a building, where I encounter many different and new people, creates another reference, or has another identity, than one in which I rarely meet people, or rarely meet new people. This, over time, builds up a pattern of relations which are located and embedded in social space, which gives that space its identity and serves as a source of meaning. A meaning possible to analyse through the analysis of spatial behaviour. In so far as spatial behaviour is produced by the physical form of the building, spatial distribution plays an integral role in the production of meaning in a very concrete, yet thus far less explored way – namely in how it distributes the evolving patterns of social interaction and relations in space.

131 See for instance Habermas (1984) and his discussion on communicative actions.
133 Space syntax theories are the ones thus far providing the best correlation between analysis of form and use/behaviour and will thus serve as a basis for this thesis. Hillier/Hanson (1984), and below.
3. Social space and social relations
3.1 Introduction

With the theoretical framework of meaning established, including a foundation for from what sources it is produced, and a tentative methodology presented in the three modes of distribution, the methodology as it stands still needs further theoretical grounds before moving on to an application. If, as stated above, the methodology is primarily designed for the analysis of space (or spatial systems) and its relation to social relations through the concepts of the distribution of, in and through space, both the concept of space and that of social relations must be further developed, as must the idea of spatial systems. Thus, in the following the concepts, treated mainly as interlinked concepts, will be further refined both theoretically and for practical purposes for the methodology.

This will be done first through a discussion on space as a social entity, social space, based on the theories of Bill Hillier and Henri Lefebvre, both in how they complement and contradict each other. Approaching space and society with different theoretical outsets, a cross-reading of the two serves as a key for the methodology herein proposed. Using different methods, and having different goals with their theories, they both work with the basic idea that the most important aspect of space is how it is used or lived.\footnote{Note that they do not in a significant way refer to one another, either directly or indirectly. See e.g. Hillier (1996) and Lefebvre (1991).}

Following, a discussion on social relations will clarify the base for how these are viewed in this thesis. They will be discussed as types of social relations – relations of power and bonds – and levels of social relations – relations of self-to-self, self-to-others and self-to-the other. Further, the idea of relations and social structures as existent in the daily routines and actions, in the performative, will be presented. This will primarily be based on the works of Anthony Giddens, Thomas Markus and Judith Butler.\footnote{See Markus (1993), Giddens (1984) and Butler, Judith, Gender Trouble – feminism and the subversion of identity, 1990, and Excitable Speech – a politics of the performative, 1999.}

Finally, the concepts of configuration and spatial systems will be explained, as the link between the two above used in the methodology. Configurative analysis of space and spatial systems serves well for such a task – both because of the empirical support and found correlations between configuration and spatial behaviour and because the configurative analysis in itself is based on space as social phenomenon, or social entities. Thus, configurative analysis has much to say on how space produces the potential for social relations and situations to appear, and is the primary link between space and social relations used in the methodology.
3.2 Social space

The reason for using a term such as social space instead of ‘space’ in general is the focus on space as a social entity – as both a result of and a means through which social relations are both expressed and (re)produced, and which is based on the relation between physical and social factors.\textsuperscript{136} As such, it is not necessarily the same as ‘Euclidian’ or ‘physical’ space, but is based on properties defining and defined by people and the possibility of space to contain, express or define relations and non-relations them in-between. This, in a simple way, is the starting point for both Henri Lefebvre and Bill Hillier (et al) who both extensively analyse, dissect and discuss the relations between social relations, society and space.\textsuperscript{137} Both from the idea that space, as we treat it, experience it and use it, is inherently social, both in purpose and effect. Space, as they both see it, is much more than mere ‘backdrop’ or ‘milieu’ in which social interactions and relations are lived out, but is an integral part of these relations.\textsuperscript{138} Their means of analysing this ‘social space’, the questions they raise and the answers they come up with are, however, different – not in that they contradict each other, but in that they are based on what could be described as different ontologies, and that they work with completely different methods.

Though this is not the time or place to develop as extensive a comparison as the cross-reading of the two theories deserve, but introducing such a discussion is needed to understand the coming discussions in the latter part of the thesis, since it is what has generated large parts of the ideas and concept behind the formulation of the methodology herein presented. The intention is not to claim they are saying the same thing, nor is it a goal in itself to tone down conflicts or differences in their writings – the reason for the coming focus on similarities and analogies in the two theories is to point out both how

\textsuperscript{136} As will be discussed later on, this does not mean leaving physical constraints to the side but looking into just how such constraints provide support or disruption for (the intended/expected/wanted) social life.


\textsuperscript{138} There is a tendency in sociological studies and theories to treat space as a prerequisite or something ‘that is’. This is not to say they do not take space into consideration, but that the concepts of space are often of a non-architectural kind, for two reasons – they tend to disregard the impact of the physical morphology of space, and they tend to disregard the way space produces situations of co-presence and interaction. Space is where people interact – but how these interactions come to happen as a result of spatial distribution in itself is not considered. In the terms herein proposed: Sociologists tend to work with distribution in space, but not with the distribution of and through space. See e.g. Giddens (1984), Habermas (1984), Castells (2004), Mänsso (2003), etc.
they might enrich each other as well as to describe how they work together in producing the theories behind the current work.

The relation between Hillier’s and Lefebvre’s theories could be viewed in two general ways – either Hillier provides a method for studying Lefebvre’s theories more concretely, or Lefebvre provides a theoretical means from which to both criticise and explain Hillier. The approach in this thesis could be described as ‘both and neither’. This is not an attempt to ‘Hillierise’ Lefebvre or ‘Lefebvresise’ Hillier, but a study based on the two theories and the ideas and learnings sprung from a cross-reading of the two, taking inspiration both in where they coincide and in where they contradict each other. Thus I have allowed myself to somewhat freely move between the two and compare ideas and proposals that at closer scrutiny might be further apart than they herein appear. This is not, as made clear above, in an attempt to unite the two, but a way in which to let them work through each other in order to drive the investigation of this thesis further.

Social space in Hillier and Lefebvre

Returning to the discussion on space, the first apparent similarity them in-between, as noted above, is that they work with what could be called social space.\(^{130}\) As for the constitution or nature of such a social space, there are differences between how they define this for sure. What both, however, in different ways emphasise is that social space is relational space.\(^{140}\) It is based on how spaces are related to one another and how this represent and (re)produce social relations. Social relations, they both claim, are to their nature spatial.\(^{141}\) Through space human interaction, the conduct of human life, is ordered and take place.\(^{142}\) People and groups, and the relations them in-between, are ordered both in and by space\(^{143}\) – be it architecture or the simple fact that people and human bodies unavoidably exist in space. Either need for privacy, differentiation or co-presence, social space plays an important role in producing these social characteristics.

Another important similarity is the focus and emphasis of the system of space as a whole as the most meaningful to study. There are, naturally, boundaries on the spaces that are analysed or discussed, but the study is not of a space but of a set of spaces that through their interrelation produce social and cultural implications and relations. Partly as a result of this, the formal expressions of buildings or cities, or their aesthetic form, are somewhat left aside in favour of how space is produced by and produce social behaviour, inter-

\(^{130}\) Though Lefebvre is the one to more consciously use the term social space, it is a fundamental part of the space syntax theories that space is inherently social, and that space contains social relations as well as social relations contain spatial dimensions. (Hillier/Hanson, 1984, pp. ix-xii) The use of the term herein is based on how it is presented here, and on Hillier’s and Lefebvre’s works. Other concepts of social space exist and have their merits, but are not to be included in the use of the term in this thesis.

\(^{140}\) Lefebvre (1991), pp. 68-79.

\(^{141}\) “The study of space offers an answer according to which the social relations of production have a social existence to the extent that they have a spatial existence; they project themselves into a space, becoming inscribed there, and in the process producing that space itself.” Lefebvre (1991), p. 129.

\(^{142}\) The very phrasing ‘take place’ as a description of something happening shows the inherent spatiality of events, something takes place – it occupies a strip in the space-time continuum of social life. Giddens (1984).

\(^{143}\) Lefebvre (1991), pp. 89-91.
action, relations or use.\(^\text{144}\) They are both agreed that space and society of today cannot be understood by studying some kind of ‘primitive’ space or ‘origins’ of building, but must be understood primarily through how it works today in all its complexity – as this very complexity is part of its nature.\(^\text{145}\) Hillier further states that buildings by their very nature are complex and multifunctional, and that they therefore must be approached and analysed as such.\(^\text{146}\)

A third observation is that they both set out to analyse space from the view of ‘space itself’. It is neither the object (the material walls, ceilings and floors) nor other factors that are the focus of their study, but space, which in both cases becomes so much more than ‘the void between the walls’. As Hillier puts it, what is valuable in a building is not the walls or the material construction – indeed, we rent, sell and build space – the material building is the physical means through which this space is ordered and defined, but the purpose of building is space.\(^\text{147}\)

**Space as a social entity**

If space is a social entity it is so because it defines and (re)produces social relations, and because it is an expression of said relations.\(^\text{148}\) The relation between space and society, however, is both strong and loose. Even if, as both Lefebvre and Hillier agree, there is no such thing as a one to one relationship between space and function, they are both agreed upon that space has an impact on society and culture, through the way it is organised by and organise social relations. Space promotes, prevents, generates or supports certain outcomes, but the connection is not one of direct cause-and-effect.

Within a given system of space, a number of social systems can exist and, as Hillier notes, there seem to be difference between cultures on how much of the social formations is invested into space. Social systems can seem to be possible to superimpose on space. This, however, can only be done to a certain degree. As one example, ‘non-hierarchy’ can to some degree be imposed on hierarchical space, but it will require conscious efforts of continuous character to prevent the spatial system from producing a more hierarchical set of relations and in the prolonging a more hierarchical culture.

As such, space, and how it orders people, is an important part of culture, and is invariably of social meaning.\(^\text{149}\)

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\(^{144}\) In Hillier’s works, it is sometimes forgotten or overlooked that part of the reasoning behind the space syntax analysis is that the at the same time as space is considered to produce certain functional or behavioural outcomes, social and behavioural factors are considered important in the production of space (though in Hillier’s works the ‘production’ of space is much closer related to ‘building’ than in Lefebvre’s). See especially Hillier/Hanson (1984).

\(^{145}\) “As much as they might like to, anthropologists cannot hide the fact that the space and tendencies of modernity (i.e. of modern capitalism) will never be discovered in either Kenya or among French or any other peasants. [...] If we are to come to grips with this ‘problematic’, instead of turning to ethnology, ethnography or anthropology we must address our attention to the ‘modern’ world itself, with its dual aspect – capitalism, modernity – which makes it so hard to discern clearly.” Lefebvre (1991), p. 123.

\(^{146}\) “The speculation that buildings are somehow ‘explained’ by being defined as shelters, because we imagine that there must have been a time when this was all that building was, is about as useful to understanding the social and cultural complexities of buildings as the idea that language began with pointing and grunting is to theories of the structure and functioning of language.” Hillier (1996), p. 21.

\(^{147}\) Hillier/Hanson (1984).

\(^{148}\) “The ‘social order’, in this way, is given physical expression in the ‘spatial order’, while the spatial order supports the social order. We can say that the spatial order is one of the more important means by which the social order reproduces itself.” Marcus, Lars, Architectural Knowledge and Urban Form, 2000, p. 25.

\(^{149}\) Hillier/Hanson (1984).
This leads to the question of the form-function-meaning relation more explicitly. When discussing this it is important to remember the both strong and loose relation between form and function as described above, and that this is a premise for the following.\(^{150}\) It is tempting to attempt to find more simple solutions as implied by assigning ‘types’ as labels of ‘function’ and considering this as what produces ‘meaning’, or by other more or less direct connections.\(^{151}\) The outset in this thesis is that this connection is both much more complex and indirect, and that one of the ways this connection exists is through *spatial behaviour*, or how we make use of space – what could also be called the performance of the spatial system or building.

As an understanding of this relation between form and use,\(^{152}\) one of the most developed, and most empirically proven, theories within architecture up to date is the space syntax theories. Consequently showing high correlation between their spatial models and the outcome of both movement and other factors, they seem to have captured some fundamental part of how space and spatial behaviour is linked together, and in extension how these affect social relations.\(^{153}\) If for no other reason, this correlation between spatial model and human behaviour is, as will be shown throughout the thesis, also a vital part of understanding how space contributes to the *production of meaning*.

**Lived space**

If it is so, that space both produces and reproduces social relations, as it is produced by them – is it then reasonable to treat meaning as something existing in space, or to treat it as something *produced in, by and through* space? The continuous production of both social relations and space in and through each other suggest that meaning, too, as studied in space, is *continuously (re)produced*, or that there is a *performative* side of meaning that is produced by space.

To further understand such a connection from use to meaning, social space, according to Lefebvre, is primarily *lived space* – space as it is experienced and used in day-to-day life. An important part of *lived space* is interaction and exchange, the (re)production of social relations performed in both active and passive communication between people co-present or co-absent in space. Through codification through such evolving patterns, space carries meaning through signifying do’s and don’ts, and this meaning is continuously reproduced by social practice.\(^{154}\) For Lefebvre, space, in as good as every sense of the word, *is* social practice. Lefebvre further states that *social space* is “[...] inseparable from mental space (as defined by the philosophers and mathematicians) on the one hand, and physical space (as defined by practice-sensory activity and the perception of ‘nature’) on the other.”\(^{155} 156\)

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150 This, the both strong and loose relation between form, function and culture, is integral for both theories – something that is sometimes overlooked when discussing space syntax.

151 “The Problem is that it is easy to jump to conclusions when it comes to the link between these two dimensions; we like to think that something in the built environment’s spatial dimensions leads to an outcome in the social dimension, for example that ‘repetitive lamella buildings’ lead to ‘anonymity’.” Marcus (2000), p. 40.

152 “It is here preferred as a term over *function*, the reason for which is explained above.

153 The premises under which this trend to work as well as a more precise description of the theories will be developed below.

154 Something further supported by e.g. Giddens and Butler, describing how social structures and rules are maintained and (re)produced through our performance of them, especially in our day-to-day routines. Giddens (1984), Butler (1990).

Here is an important difference in Lefebvre’s and Hillier’s theories – space for Lefebvre is closely connected to social practice, to peoples use of space, while for Hillier, space is something per se that does not include human action, definable by its physical properties whether they are perceived or not. Though a simplification of the difference, it is also an important one. It is a also difference that is attempted to be bridged in this thesis, not by being ignored, but by treating “physical” space and its connection to spatial behaviour on the one hand, and reading the resulting meaning through the filter of lived space on the other.

Thus, space is not only a physical entity, but something which both embodies and produces social relations, not the least through how it is lived, supporting or even producing social structures, both as representations of such structures and as supporting a social performative. Hence, understanding space as social space, as discussed above, supports the discussions on space and social relations that is to come, and that is part of the methodology developed in this thesis.

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158 See also below, The Distribution through Space, where the discussion of such a connection is evolved further through the concepts of spatial cognition and the perceived logic of the world.
3.3 Social relations

Before going further, it is in its place to somewhat deepen the understanding of and define how social relations are treated in this thesis. Though this is a discussion that will be continuously returned to, there are some reoccurring themes, thoughts and terms that should be made clear. If society, and social meaning, is built up by and through social relations or the patterns thereof, concepts for how these relations are produced and of what kinds they are need to be formulated as a foundation.  

As far as this thesis goes, social relations will be treated through two basic themes, which are not mutually exclusive but rather work in and through each other; one being the types of these relations – power and bonds – and the other being the levels on which these relations exist – self-to-self, self-to-others and self-to-the other. The dependency of space and spatial relations for such relations is both direct and indirect. To some extent, they are, as noted above, dependent on the possibility of co-presence or co-absence in space and time, and thus are built up by for instance patterns of movement, meetings and social interaction. For now, however, the focus is not their production but to clarify the types and levels of relations as used in the following.

Types of relations: power and bonds

Social relations are relations of either power or bonds. Between individuals, between groups or classes, between the high and low, people and things, et cetera. The former is commonly accepted and extensively discussed throughout social theories and philosophy, while the latter to some extent is less commonly used. Power relations are ever present in space and society, and are an integral part of what makes up the social structure. Be it the status of member in e.g. a family or how society as a whole is organised into a state. Relations of bonds, as different from those of power, are freely chosen and are to their nature the inverse of power relations. While power relations are in a way finite and where the growth of power for one inherently means the loss of

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157 To a certain degree, what is discussed in this thesis is the production of social relations through spatial configuration, and thus the discussion in this chapter will remain brief.
158 See above, but also e.g. Hillier (1996) and Giddens (1984).
159 Markus (1993).
160 See e.g. Foucault, Bourdieu, Giddens, Castells – though they all approach the relations differently, they all deal primarily with social relations as relations of power.
161 Though what is here named bonds, the type of relations described by the terms are existent in other writings, e.g. Castells (2004).
power for someone – or something – else, bonds are those relations that the stronger they grow and the more people sharing them, the more everyone included benefit from them – such as close friendship or ‘maternal love’.162

Saying that relations are ‘either of power or of bonds’ is naturally a simplification, as any kind of relation produce a difference in social status or power. The same, however, can not be said about bonds. Bond relations are optional and developed by choice (more or less) while power relations are inherent in the very nature of society. One can raise the question to what degree bond-characteristics exist in most relations within a social group – even if they are not ‘explicitly’ created. The point here is that though, as stated by Giddens, relations of power are not inherently oppressive or connected to conflict or struggle,163 understanding society as a set of power relations, risk disregarding aspects of social relations which are covered and explained through the concept of bonds.164

Levels of relations: self-to-self, self-to-others and self-to-the other

Social relations, further, exists on many levels – between two subjects (individuals), between people and things, between people and the state, between social groups et cetera. One fruitful way to understand these levels in relation to the question at hand is, as described by Thomas Markus, to divide them into three levels – those of the self-to-self reflexive individual, those of self-to-others (others-to-others) and those of self to the other (others to the other).165

The self-to-self relation is the self reflecting individual, how ‘I’ relate to ‘myself’ and my actions, my personality and my values, how I identify myself.166 This relation could be further understood, I propose, seen through the hermeneutic concept of interpretation as defined by Ricoeur, as it can be understood as part of the play in which meaning is produced from the reading of a work, where an important part of this process is letting the ‘self’ go, and relating the ‘self’ to ‘the world disclosed by the work’, and then reconstructing or repositioning the self from the emerging relation of self-to-the other.167

The second relation, self-to-others, stands for the ‘concrete’ relations between people. Self-to-others relations are from one individual to another individual, or other individuals. These are important parts in the communication and exchange of knowledge, information, ideals, values and culture, and are to a large degree formed in the daily meetings in space. The relations of bonds are mostly found on this level of social relations.

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162 Markus (1993), pp. 9-12.
163 ‘... Power is not necessarily linked with conflict in the sense of either division of interest or active struggle, and power is not inherently oppressive. [...] Power is the capacity to achieve outcomes; whether or not these are connected to purely sectional interests is not germane to its definition.’ Giddens (1984), p. 257.
164 The bond relations are also what forms many of the social groups described in the power of identity, as the groups of society formed not by location, class or role but based on solidarity and common interests or values. Relations within and between these groups are still at large relations of power, but the forming basis of them are primarily bond relations, though Castells does not use this specific term himself.
166 Castells (2004).
167 Ricoeur, even though he does never explicitly use the term self-to-the other, the world in front of the work is such an ‘other’ in the sense described above. Ricoeur (1982).
The third, self-to-the other, finally, is the relations to either things (abstract or concrete) or concepts or other more ethereal phenomena, such as power, society, knowledge, the state, reasoning or art. Important to note here, is that the other is sometimes used to discuss other people. As for this thesis, the way the distinction is made is that the other – as far as relations to other people are concerned – stands for the more abstract form of relation to other people – other persons as ‘the other’, as different from ‘me’ or ‘myself’, ‘strangers’. Further defining the difference between self-to-others and self-to-the other for this thesis, the former stands for concrete relations from one individual to another individual (or individuals) while the latter stands for a relation between one self and others, who are not this ‘self’.

As far as this thesis is concerned, the focus will be on the latter two, developing a methodology for understanding the production of meaning in the objects of study through how relations between people, between people and objects and between people and the building are developed and serve as sources and producers of meaning.

As for how these relations – of power and bonds and of self-to-self, self-to-others and self-to-the other – serve to produce meaning, one important part is how they are met by people – not only those who are ‘directly’ affected by them, but also by them who ‘witness’ these relations. The relation to these relations, as Castells describes it, are either confirming, opposing or (re)constructing.168 Either the relations, as presented, are accepted, and in this case they are confirmed and strengthened by this agreement, or they are opposed, which to some extent also strengthens and reproduces them – opposing something is in the same time confirming both its existence and its importance. In comparison, reconstructing is a conscious act of trying to disregard the existing relations in order to produce new or other sets of relations or ways of relating.169 As the methodology presented here primarily works with the latent meaning, the discussion will primarily be on meaning that is produced in a subconsciously confirming situation, which would be the case in most situations where the methodology is to be applied. The other are thus not denied as existing or important, but will be considered to quite a low extent.

Performative relations: routines and day-to-day conduct

What are, then, social structures, these sets of social relations in societies or groups? Are they things in themselves, or are they tangible systems or defined by institutions and regulations? Reading Giddens or Foucault, it becomes obvious how such structures to a large degree are something that lives on through their mediation – in the performing of them.170 Social institutions and norms, relations of power and bonds, are performed. This does not mean they do not exist, but is an expression of their mode of existence.

Another way to explain this is to describe social relations as in their nature largely performative.171 This is not to be seen as a spectator-performer relationship, with a scene and an audience, but lies in our day-to-day conduct

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168 Which can also be seen as positions the ‘self’ can take regarding ‘the world in front of the work’ as disclosed by the ‘reading’.
170 Giddens (1984), Foucault (1977), and Foucault, Space Knowledge & Power (In Leach 1997).
171 Butler (1997).
and social routines just as much as in more explicit performances. It is in this important to keep in mind that the reason for calling such actions or routines and their following meaning *performativ*e and not expressiv*e* or expressions of social structures is, that *expressiv*e presupposes that there is something existing, some original meaning or structure, which the act in itself is an expression of, while *performativ*e means that the acts in themselves are the original – that that which the acts means or forms lies in the acts in themselves and are not expressions of something else. Thus, large parts of society, norms and culture are based on performativ*e* acts and structures. For these to be *expressiv*e acts, there need be an original, natural, way on which they are based or to which they refer, that lies outside of the action and its tradition itself.

This is another key as to why studying ‘actual use’, and possible ways to predict it, is important for the discussion of meaning. The day-to-day conduct in buildings or cities contribute to constructing such a *performativ*e of space, be it in a building or a city, and contributes to the *performativ*e meaning of the building, at the same time as it can either support or disrupt the routines of day-to-day conduct for its visitors or inhabitants – supporting or disrupting performativ*es* in society.

An important note, however, is that I do not claim that all the performativ*e* social structures can be analysed by the methodology proposed. Far from it. What I do claim, though, is both that meaning in architecture has such a performativ*e* part, which is considerable, and that this *and some* of the social performativ*es* can be understood through spatial analysis.

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3.4 Spatial systems as configuration

As discussed above, the primary focus of the methodology, as far as space is concerned, is on spatial systems (or systems of social space). Existing in many different interpretations, from ‘purely’ architectural to being used in regional planning or economy, however, and within these fields used in many different ways and for different purposes, ‘spatial systems’ serve to be defined further. Though some liberties are at times taken with the term, the primary definition of spatial system used in this thesis is the one provided within Space Syntax theory. One reason being that space syntax offer a large, coherent field of research and theories, another, the repeatedly found connection between spatial configuration and certain performances. Also, the definitions of space and spatial systems given within the space syntax theories are logically coherent and more or less generally applicable on space.\(^\text{173}\)

Further, as we are dealing with relations, and how they are expressed and produced in and by space, and the ‘logic of the world’ as constructed by space, this implies space as more of a system of relations and relative positions. Actually, this way to address space – and indeed the foundation of space syntax – is closely related to structuralism and poststructuralism, though as applied on architecture in a different way than what is perhaps more common within architecture theory.\(^\text{174}\)

Hence, the methodology that is being developed will be based on space and how it produces meaning, primarily focusing on systematic aspects of space – how space is organised and structured and the interrelation between spaces, the positions of spaces in the system as a whole. This independent of whether the discussion is on configurative space as defined by Hillier et al or used in a more free way.

Configuration and space syntax

The basic notion of the space syntax theories is that space is configurative. That is, that space is primarily defined by the parts’ relative positions to each other and that these relations are not measured in metric distances but in configurative steps. Further, that space is a system of parts where the properties of the parts are not only given by the parts in themselves but are highly dependant on the position of the parts in the system as a whole. The foundation of

\(^\text{173}\) Some problems with the definitions exist, but they are of minor character and can be addressed – which to some degree is done in the following chapters.

\(^\text{174}\) See e.g Hays (1998), Leach (1997) or Nesbit (1996).
space syntax is the found relation between such configurative systems of space and how these are generally used by people; a case in point to begin with being London, where the pattern of integration has proven to to a remarkable degree correspond to the patterns of movement in the city.175 Following these findings, the theories are constantly evolving, providing more and more support for the relation between spatial configuration and spatial behaviour, and the methods of analysis are constantly refined.

Basically, the models used are graph-theoretical. Architecture or urban areas are represented in different kinds of graphs that single out certain aspects of spatial configuration which can then be studied as graphs. In many regards, this is the same kind of theory as general flowcharts used by many architects to describe patterns of movements or intended such in projects, only made more theoretically and methodologically founded out of a set of rules and concepts on how they are constructed. Once these graphs are created, be it axial-line graphs or ‘trees’ of convex space relations (justified graphs) or, for that matter, plans, they can be studied as mathematical/graph-theoretical problems and compared to empirical studies of actual use.176

It is this, the possibility of comparing structural (syntactic) properties to functional outcome, which is the base and strength of space syntax – finding relations between analytic result and ‘actual outcome’. As long as this is seen as part explanations of complex questions and not a simple and direct cause and effect description,177 this kind of research has great potential and is extremely successful in helping us to explain and understand architecture. In short, what space syntax allows us to do, is to to some degree analyse not who meets who, or when, nor necessarily how, but where there are higher or lower degrees (chances or risks) of co-presence, privacy or encounters. This, as different from programme or functions, could be called the performative use of the building.

**Configuration**

The foundation of space syntax theories, as noted above, is the concept of configuration, and space as configurative systems. Thus, understanding configuration is important for the coming discussion.

In its simplest way, configuration can be defined as the relations of the parts and their relative position in the system as a whole. To further explain this, however, a pair of examples is perhaps best used. Consider the spaces in figure 3.1a. The two spaces are connected, and their relations to each other are reciprocal.

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175 See e.g. Hillier/Hanson (1984), Hillier, ‘Specifically Architectural Knowledge’, *Nordic Journal of Architecture research*, #2/1993. For integration also below.

176 Bill Hillier is himself always careful to stress that it is the outcome, the actual use, that is in focus and that his research is valid only as long as the correlation between analysis and outcome is sufficient.

177 Something that is constantly stressed by e.g. Hillier himself – the found correlations of the models of analysis are not considered to be a result of a simple cause-and-effect relation.
Space $a$ relates to space $b$ as space $b$ relates to space $a$. The relations are also symmetrical. If we add a third space, as in figures 3.1 b and 3.1 c, other sets of relations occur. In 3.1 b, the relations between each spaces are reciprocal, and the relations are symmetrical – the relation between $a$ and $b$ is symmetrical to that of $c$ and $b$ etcetera. This is not the same in figure 3.1 c. Here, the relations are still reciprocal, but with respect to $c$, $a$ and $b$ have different positions in the system. The relations are asymmetrical.

This difference, the asymmetry of the relational position of spaces in the system as a whole, is a configurational difference, and the system can be described through a system of nodes and connections, as in figure 3.1 d. Further, as far as configurative relations are concerned, the size or forms of the spaces are in a sense irrelevant.178

A more complex set of relations, and its use for understanding spatial systems and their importance in architecture, can be shown in a simple example such as that of figure 3.2.

Notice how the in formal or geometrical terms quite similar ‘buildings’ are dramatically different when treated as configurative systems. There can be no doubt that the possibilities for how to use three such different buildings are dramatically different – both in how movement is guided through them and in how ‘private’ and ‘public’ both can be distributed and by the configurative properties is distributed in each.

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178 The form of what would ‘traditionally’ be regarded as ‘spaces’ is highly relevant, as described below, though in another stage of the analysis – namely through how the form of a ‘room’ (which in this case is a better term) affects the subdivision into spaces that is the basis for the spatial system to be subject of syntactical analysis.
As a final illustration to the idea of configuration can be presented three villas of Frank Lloyd Wright as presented in figure 3.3. In their formal expression quite different, they can all be treated and understood as formal elaborations of the same spatial configuration.

This conceptual foundation and the concept of depth – or number of configurative steps – is then the basis which is further developed into more complex situations through the use of the standard method of graphs, one of which is the justified graph that can be seen in the figure above (figure 3.2, right). 179

**Spatial entities in space syntax theory**

In order to build such configurative systems, a concept of space is, of course, necessary. Within space syntax, there are basically three ways of defining space – which in some ways correspond to three different modes of being. 180 Importantly, they are all based on their social potential, and defined through the concepts of co-presence and accessibility – that is, the possibility of people being co-present and (without having to leave the said space) able to reach each other.

Both the axial and convex space, as used in space syntax, are based on the idea of mutual co-presence in space. This requires convexity in space – every point in space must be able to see every other point in space. When this is the case, every point is co-present with one another. Any concavity blocks such a co-presence, and thus subdivides space into different units. As a general rule, space syntax bases the subdivision of space on the notion of making as few and large spaces as possible.

On these premises, axial space could be said to be the longest spaces of co-presence and accessibility possible to produce, while convex space could be said to be the largest and most convex spaces possible to produce. 181

Visibility analysis (VGA), on the other hand, is based on the concept of isovists – which is most easily understood as what can be seen from a certain point in space. The important thing here is that what is the grounds for the analysis of these isovists is not what can be seen in general, but what other points in space can be seen. 182

These three – the fewest and fattest spaces, the fewest and longest lines, and the isovists that describe space are then combined into systems, on which configurative analysis is performed through mathematical means, and the results compared to observations – be it of movement or any other behaviour.

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179 The figures used in the above are found in: Figure 3.1 and 3.2 from Hillier (1996), and Figure 3.3 from March/Steadman in Supra no. 120. (1971) The villas are: a) House for a Family of $5000-$6000 income; b) Ralph Jester House, Palos Verdes, California, 1938; c) Vigo Sundt House, near Madison, Wisconsin, 1941.


181 i.e. the spaces with largest area compared to the length of their perimeter.

182 Isovists were first developed by Benedict (Benedikt, Michael, ‘To take hold of Space’, in *Environment and Planning B*, vol 6/1979) and transferred to configurative concept by Turner and Penn (Turner, Alasdair & Penn, Alan, *Making Isovists Syntactic: isovist integration analysis*, 2nd International Space Syntax Symposium). Instead of ‘points’ the term used is often vertexes, as ‘points’ is such a loose term. Vertexes are considered the ‘points’ distributed in space which is then used for this analysis. Within space syntax analysis, these vertexes are evenly distributed in space, each vertex on a similar distance from the closest other vertexes in a grid.
**The mathematical measures**

Finally, the mathematical measures that are used in the analyses serve to be described, as they are important for the understanding of the same. For this thesis, the focus will be on five of these, *integration, connectivity, control, controllability* and *clustering coefficient*. They will be briefly explained in the coming.

**Integration**

Integration is a term for how well ‘integrated’ a space is in the system as well as how well all spaces are integrated within the system. Though perhaps confusing at first, the term has the same meaning in both cases, though viewed from an individual space or the system as a whole respectively. In short terms, integration stands for how close a space is to every other space in the system, seen in configurative steps and in a relative measurement to how deep the system is as a whole.

More formally, this is calculated through mean depth – the mean distance in configurative steps to all other spaces in the system, divided by the number of spaces in the system (minus the one currently calculated), which is then divided by the mean depth of a space in an ‘ideal’ system, one that is as integrated as possible.\(^{183}\) The latter in order to reduce the effect of size on the measurement. This is then inversed, so that the more integrated space (that which is closer to all other spaces) gets the highest integration value.

The integration value can be calculated on parts of the system, limiting the spaces taken into consideration to those of being a specific number of steps away from the space in question. The most usual sets are *global integration*, in which all spaces in the system is considered, and *local integration*, which as a result of practice stands for integration measured within three configurative steps of the space in question.

Important to remember is that it is not the value of integration in itself that is the primary point of the calculation, but the relative values of the spaces in the system compared to one another.

**Connectivity**

Connectivity is perhaps the most easily defined. Connectivity is the term for how many spaces are connected to the space in question. A space connected to three other spaces would have a connectivity of three, while a space connected to two other spaces would have a connectivity of two, etcetera.

**Control**

Control is a measure for how much control a space has over its neighbour’s connections – in social terms, how much control do ‘I’ have when I am in space a to who comes to and leaves the spaces adjunct to a. Formally, it stands for the sum of the inverse of the connectivity of the spaces to which a space is connected. As a simple example, if space a is connected to space b, which has no other connections, space a would have a control value of 1 (if there are no other spaces in the system). If space b is further connected to space c (giving b two connections, the connectivity of b then being 2) then the control value of a would be \( \frac{1}{2} \) - the inverse of the connectivity of space b.

\(^{183}\) These values are known as *mean depth, relative asymmetry* (RA, the mean depth divided by the number of spaces in the system) and *real relative asymmetry* (RRA, the RA divided by the RA for a space in the centre of and ‘ideal’ system, which is considered to be a star-shaped graph). See e.g Hillier/Hanson (1984), p. 143-173.
**Controllability**

Controllability is conceptually the inverse of Control, though not in its graph-theoretical application. The measure is used within visibility analysis and can simplest be described as *to what degree can space a’s connections be controlled by its neighbours*. In this measurement the relations of the neighbours are taken into consideration – which means that if vertex a is under the ‘control’ by vertex b and c, the controllability of vertex a would depend on whether vertex b and c are connected. When used in a visibility analysis, this leads to an understanding of how well controlled a space is as to how it is possible to get to and from it.

**Clustering coefficient**

Clustering coefficient, finally, is another measurement used in visibility graph analysis, and stands for the *convexity* of the isovist from a given vertex. Formally, this is measured through dividing the amount of vertexes that are *all visually connected to each other within the said isovist with the amount of vertexes included in the same*. In a completely convex space, the measure would be one (all vertexes can see each other). The more ‘branches’ the isovist is divided into, the lower the clustering coefficient.

**The representation**

For the sake of being easy to read, the values are commonly represented as graphs overlaid on plans or maps of the object of the analysis. The respective values are then represented through colours, where the highest value are red and the lowest blue or purple, following the gradient of the colour spectrum from low to high. Through these means, it is possible to both analyse and discuss the result without being able to understand or perform the exact mathematical formulas and calculations leading up to the resulting graphs.\(^{184}\)

**Concluding notes**

When relating to and using the space syntax methods, it is important to remember that ‘high value’ is *not* the same as ‘good’ or ‘high quality’. This is something important to stress since it is a common misconception regarding space syntax – especially from the outside, but at times it can be gleaned ‘within’ the community as well. This especially when discussing integration.

A high or low value is conceptually neither good nor bad, but only so in comparison to what outcome is wanted or preferred. As a very simple example, if the goal is privacy and seclusion, high integration is probably a bad thing. This is not to say that, given a certain culture, one value would lead to a ‘better’ outcome than another. If for cultural reasons, high degrees of co-presence and a high rate of encounters – especially ‘unplanned’ encounters – are considered as positive, a system with high integration, and a large integration core, would be more plausible to produce the sought after effect than one with low integration.

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\(^{184}\) This is the reason I have taken the liberty not to fully explain the mathematical aspects of space syntax. For performing the analysis, and for the sake of this project, understanding the mathematics has been important. What is meant here is that *for the reading and understanding of this thesis* such an understanding is not necessary. If a deeper excursion into space syntax and its mathematic foundations is sought fore, I refer to Hillier/Hansson (1984), and Hillier (1996), as well as papers on the subject by Bill Hillier, Alan Penn and Alasdair Turner available from the Bartlett, UCL.
Having said this, the use of the tools and analyses, and especially the interpretation of the result – as well as the priority of correlations – are naturally the results of choice. What is attempted within space syntax as a research project is to work down the degree of subjectivity in this choice, and to base the choices made on where they seem to correspond to actual observations.

Further, the idea within space syntax is not that goals or intentions of movement or other spatial behaviour is uninteresting, but that such are complemented and partly produced by how these potential goals are located in the syntactic system. I would go so far as to say that space syntax analysis has its highest degree of correlation when the potential goals of people’s movements are evenly distributed in the system, and when every such goal is potentially interesting for every person involved.

Finally, the analyses does not attempt to predict a specific movement of a specific person, but how the sum of the collective routes distributes themselves in space over time.
4. Space and use in three public libraries
4.1 Introduction

Thus it is time to begin the analysis of actual buildings, understanding how they, through their spatial configurations and how these are lived, perceived and used produce meaning. Before reaching the discussion on meaning, however, the preliminary spatial analysis need to be performed and presented, as well as a study of how spatial properties are correlated to use. This first part of the methodology consists of such analyses, and hence for applying it in the coming, a basic understanding of the libraries as systems is needed. Not the least, the objects of study need to be presented and described.

As for the objects of study, the choice has fallen upon three buildings – three public libraries that have gained wide acknowledgement as works of architecture, both from professional architects and the general public. The libraries in question, the City Library of Malmö, by Henning Larsen (an addition to the old library by Smedberg), the City Library of Stockholm, by Erik Gunnar Asplund and the City Library of Växjö by Smith-Hammer-Lassen (an addition to the old library by Uluoto), all lying in or close to the centre of the city in which they are situated, are living parts of the city life and important landmarks of the respective cities.

To a degree, they follow a timeline of different views of how a library should be built – from the ordered and relatively enclosed library of Stockholm to the open, glazed spaces of Växjö. Further, the three libraries are all compositions of the same basic elements – a square and a cylinder in a row, a cylinder between two squares and a cylinder within a square; a geometric clarity and simplicity in all three, using the same elements, but in different ways.

Two of the buildings have been subject to prestigious rebuilding and additions in recent years, and the third, the City Library of Stockholm, somewhat renovated and restored closely before this study, is being considered for an addition at the time of the writing of this thesis, and are all present in the current discourse on architecture in Sweden.

On choosing the objects of study

The choice of objects of study for the thesis is based on a number of factors and has been preceded by a number of preliminary studies to both refine the

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185 The City Library of Malmö was awarded the Kaspar Sahlin Prize in 1997, the City Library of Växjö was nominated for the same in 2003 and the City Library of Stockholm is one of the few Swedish buildings mentioned repeatedly in international publications. See e.g. Trachtenberg/Hyman (1986), p. 556.
questions and find objects of study suiting the same.\textsuperscript{186} For these preliminary studies there were a few criteria postulated:

1. The object should be a public building, with a fairly large part of the activities and spaces committed to this – as in museums but not in department buildings.
2. The programme must be oriented towards a large public, with comparatively large numbers of different kinds of visitors in relation to number of visits.
3. The objects need to be adequately similar and dissimilar in a sufficient number of aspects to be valuable as comparative studies.

Given these criteria, the choice of the initial studies were based on the choices of the board of the Kaspar Sahlin Prize, the most prestigious architecture prize in Sweden, consisting of the primarily the winners but also to some extent the nominees of the last ten years. For the question, however, of the spatial production of meaning, a set of additional prerequisites soon emerged for the objects in question; a certain minimal size was needed, especially in the publicly accessible system and their location had to be fairly integrated in the city. After a number of preliminary studies, the City Library of Malmö showed to be the most promising – partly because of the set of two other libraries of similar kind possible to be included in the project. As embedded with both much symbolic meaning and the task to represent knowledge and literacy to the public, public libraries seem a strong case in point when investigating how space (re)produces meaning in society.

\textsuperscript{186} At times, within architectural research, the objects of study tend to be chosen in a way as to support what is sought for in a subjective manner, which is problematic from a scientific point of view. Thus, steps have been taken to avoid too much subjectivity in the choosing of objects for this work.
4.2 Methods of analysis

As noted over and over again, the methodology developed in this thesis is based on extensive understanding and empirical analysis of that which is being analysed – in this case the three public libraries. One of the more important steps in this is investigations based on methods developed within space syntax theories, the foundation and principles of which have been described above.¹⁸⁷ One reason for why these concrete investigations are done is to learn how space syntax analysis is applicable in publicly accessible buildings such as public libraries and what this tells us. Another is to make the analysis comparable to other research grounded on said theories.¹⁸⁸ As the theoretic foundation of this has been described above, I will not repeat the description; the aim is now to define how they are used, what additions or changes have been necessary and, finally, their practical application on the cases in question.

As an overarching structure the three modes of distribution of the methodology developed in this thesis will be used – the distribution of, in and through space – into which are ordered the analyses of the spatial systems in themselves. Thus, under the distribution of space the methods for analysing space ‘in itself’ – spatial scales and spatial models – are introduced, including a description of the concrete application of space syntax models of analysis. Under distribution in space, ways of analysing this in its more concrete sense are described, and under distribution through space the methods of observation will be presented. Finally the links between space and spatial behaviour will be presented and discussed.

The distribution of space

The primary means of analysing the distribution of space is through the four models and scales of space as proposed below, by both internal comparison within each library and as a comparison between the different libraries, as well as the relations between different measurements provided – i.e. the patterns of integration, control, controllability, clustering et cetera. This has been done through reading and interpreting the emerging patterns as well as through numerical analysis of different kinds.

The models of space can be said to be based on different principles for dividing or defining space – the axial line representing spaces of movement, the convex space map representing spaces of being and the visibility graph representing

¹⁸⁷ See Social space and social relations above.
¹⁸⁸ See Hillier (1993) for a brief and comprehensive description of these theories, and the further writings of e.g. Hillier, Hanson, Peponis, Penn, Turner et cetera.
space as it is visually experienced. Common for all these, however, are that they are models for configurative analysis and that they are defined through how social relations are made possible or hindered through physical boundaries, primarily by how they represent co-presence and accessibility.

Given this, there are still different definitions of space in the more concrete sense – even within the space syntax theories – primarily based on what level of detail is to be considered. For the purpose of this thesis, there is a need to investigate the implications of such differences in scales or levels of details, as well as investigating to what degree they are affecting, for instance, movement patterns or other kinds of behaviour.

**The spatial scales**

Following the reasoning above, four levels of detail – or four spatial scales – have been analyzed. They are here called detailed, average, basic and conceptual spatial scale. The three first are the basis for configurative analysis within the ‘standard’ procedures of space syntax, while the last is more a question of understanding the architectural concept of the building as space.

It is herein presupposed that movement and other spatial behaviour takes place in different scales. Movement through an entire building is movement of another scale than movement within one room (e.g. an office or a living room). It is not far fetched that these different scales of movement are affected by spatial properties of different scales, which means that the spaces that need be analysed are of different scales. Understanding these factors are important not only to understand spatial behaviour, but to further develop our understanding of space in buildings – to develop our understanding of how space participates in the production of meaning.

The detailed spatial scale includes most objects taking up space related to movement. This includes furniture like tables, sofas, small bookcases and so on. Chairs are considered so easy to move that they are not included.

The average spatial scale is perhaps the standard one – it includes all objects blocking sight at normal eye-height when moving. This includes most free-standing bookcases, but not tables and such.

The basic spatial scale only contains built elements – walls, pillars, differences in elevation and ceiling height and so on. Pillars are considered as two-dimensional – they split space in one direction. They do not create spaces between themselves – in the same way as doorways do not.

The spaces of each scale are, as far as this thesis is concerned, except for the conceptual scale, constructed by physical boundaries of different kinds, and their individual analyses follow the established procedure of space syntax.

**The different models**

The models used and presented here are basically the main three models developed at the Bartlett School of Architecture, UCL. Simply put, they analyse

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189 Seamon (1994).

axial space, visual space and convex space. The reasoning behind and
definition of these are presented and explained thoroughly above,\(^ {191}\) in *Space is the Machine* by Hillier, and are further developed in a lot of papers and writings after that, why I will not go into defining them at the present. What I will do,
however, is describe how they are applied, by what rules and if there are any
adjustments that have been made.

**The axial system**
The axial analysis follows the basic notion of covering all convex spaces with
the fewest and longest lines possible. Since this, however, is a sometimes too
tangible a rule, there are additional principles applied. When there are several
possible lines of the same length, the line with the highest connectivity has
been chosen; the lines have always been drawn following a visibility and acces-
sibility rule and, finally, the map is completed with lines of obvious routes that
are not automatically covered by the procedure explained.

**The visibility system**
The visibility system is the one with the least amount of choices implicit in the
construction of the graph itself, as it is computer generated to a large degree.
The plans, in the scale of choice, are created, and then the program generates
the map of analysis.\(^ {192}\) Thus few choices have to be made once the major
principle is set.\(^ {193}\)

**The convex space system**
Dividing space into convex spaces, the standard rules are applied (fewest and
fattest possible) with one modification: convex space is further defined as three
dimensionally convex space - meaning that differences in ceiling height are
spatial dividers. Stairs are here considered as ramps – consisting of one space
per flight of stair. This is then analysed both mathematically and visually to
find correlation and patterns – the latter partly since neither the tools nor the
procedure of measuring correlation is as of yet not that far developed.

**The distribution in space**
The method for analysing the distribution *in* space goes through the
identification of **functions** and **classes of artefacts** and their location in the spatial
system. Identified functions of importance are **information desks**, **spaces assigned for
social interaction** (*cafés et cetera*), **places of study**, **spaces of communication** and **other spaces**.
Thus, exactly how people *use* the specific located functionalities are not, in this
analysis, taken into consideration, but their function seen as their intended or
proposed use – their role.\(^ {194}\)

The artefacts, primarily books, are approached as how they are
classified by the library system and how they are classified by their location in

\(^ {191}\) Above, *Social Space and Social Relations*.

\(^ {192}\) ‘The program’ being *Dephmap*, developed at the Bartlett, UCL, primarily by Alasdair
Turner.

\(^ {193}\) This not to say that there are not choices made by me. The point is that the program makes
the choices based on defined algorithms that are not altered by subjective decisions, which
in the end is a necessary part of the two other models of analysis, even though the
subjectivity within each model is limited and kept as small as possible.

\(^ {194}\) Above, *On meaning – function and use*. 
space. What is interesting is both how classifications and genres in the literature are represented by their relations in space and how these are related to each other as a result of their relative distribution.

The distribution in space is analysed both based on the plans and programme of each library, on observations made on-site and on classifications of artefacts and functions as found in other literature. Though these in themselves will be presented as they are introduced into the discussion, it serves to note that the classifying into functions in large can be read in the programme or plan of the building, as it is a primary way in which planners locate things in space. The artefacts to be studied are artefacts of important symbolic or social role either in society or in the building or system studied, and thus is both dependent on the main question set up and on the role of the artefacts in the building.

The distribution through space

The distribution through space is analysed by comparing observations of people in space, as will be described in techniques of observation below, to the analysis of the distribution of space and the distribution in space. In short, it is based on observations of movement, use of functions, and noting down interaction and private activities.195 Thus how different places are actually used is considered as a result of distribution through space, even if this in many cases has the prerequisite of how they are distributed in space.

To be able to analyse these different kinds of spatial behaviour, or different flows or patterns, both our understanding of them and the analytic tools must be further refined. What spatial (and/or a-spatial) rules that affect or generate movement of different kinds and at different levels must be understood. Here, naturally, different kinds of configurative properties and their relation to spatial use is one of the key investigations.

Techniques of observation

When performing the on site studies, three major techniques of observation have been used – gateway studies, snapshots and snail-trails, all based on standard space syntax procedure refined for the cases in question. Still, the way in which the observations have been performed serves to be presented, as they are such a vital part of the discussion of this thesis.

The gateway studies are measurements of how many people pass a specific ‘gate’ (defined as an invisible line in space, preferably between two convex spaces, and demarcated by physical properties of space) during a specific period of time. This is done repeatedly in periods of five minutes and in a way so that all analysed gates are studied at least for 25 minutes and over the course of the day – before lunch, lunch hours, early afternoon, late afternoon and evening.196 This means that the observations are both made under longer periods of time and on more occasions than regularly is considered as statistically valid in space syntax research.197 It must also be said, that after four periods of observation,

196 This as represented by roughly two-hour intervals starting at 9.30am.
197 The most common time used for this kind of study is two minutes per observation period (as described in the instructions following the space syntax software bundle in 2002). Given
additional observations have little effect on the relative patterns of movement within each library. The configuration of space has in all cases allowed several gates to be studied at the same time, providing a broader basis for the following analysis. Any case of insecurity in the measurements has resulted in that specific observation being ended and the notations scraped.

The snapshots are ‘photographs’ of people in space taken at a specific time. Entering a space, everyone in it and their ‘basic’ occupation is noted down together with the time of the snapshot and the border of the studied space. These are performed throughout the libraries following each other until the entire library is covered and repeated several times a day. The snapshots include where people are (circles), with additional descriptors added; if they are moving and in what direction (arrows), if they are sitting (a cross within the circle) interaction with the environment (segment of a circle outside the circle, directed towards the object with which the person in question is interacting, up to a full second circle), interaction between people (the interacting persons inscribed within a circle) and last but not least, if their facing is not explained by their location or occupation, what direction they are facing (represented by a hook pointing in the direction in question).

The snail-trail observations consist of following persons through their visits in the libraries, noting down their chosen path and their activities as they go, including interaction, pauses et cetera, with notations of time when relevant (as in when starting or ending interaction with someone or something). Further, basic descriptions of the person followed are noted – age, sex, clothing style and other possible clues to the person’s position in society. The snail-trails are stopped when the one followed learns that he or she is followed, as this might distort their behaviour.

the kind of system (a building rather than a city) and to avoid to large effects from e.g. groups of visitors moving around this period has been prolonged to five minutes.

198 Especially in Malmö a number of gates have been studied six to seven periods. The relative amount of movement through these gates, however, remain at large the same after, as noted above, four (or even three) periods of observation, why a minimal number of five periods have been set to ensure the validity and significance of the measurements.

199 Note that this is not to say that any of these factors in themselves defines belonging, ideals or values. Taken together, however, they are a support for such an understanding should similar questions occur – are there, for instance, remarkable differences in spatial behaviour between elder and younger visitors? If someone’s movement patterns is remarkably different than expected, or the other observed patterns, is there any trait giving a clue as to why this might be?
These observations are then analysed separately and in relation to the distribution of space and the distribution in space – when possible through mathematic (statistical) correlations, again following the standard of space syntax research in calculating the r-square value as the measurement of correlation.200

The City Library of Malmö

Architects:
The new building and the rebuilding of the old library:
Henning Larsen Tegnestue A/S

The Original Library
John Smedberg

Volumes (ca):
500,000 books
20,000 music CD's
2,000 journals and magazines
160 Daily newspapers

Section through the link, facing south

Plan, fourth floor

Plan, third floor

Plan, second floor

Plan, entrance floor

0 50 m
Axial Map of the City Library of Malmö
Average spatial scale
The City Library of Malmö, Visibility Graph Analysis (VGA)

Average Spatial Scale

Visual Integration, Hillier/Hanson

Visual Control

Visual Clustering Coefficient

Visual Controllability
The City Library of Stockholm

Architect: Gunnar Asplund

Volumes (ca):
700,000 books
182,000 “Other Media” e.g. talking books, music etc.

Journals, magazines and newspapers are in another building
The City Library of Stockholm, Visibility Graph Analysis (VGA)

Average Spatial Scale
The City Library of Växjö

Architects:
The new building and the rebuilding of the old library: *Smith, Hammer & Lassen*

The Original Library
*Erik Ullote*

Volumes (ca):
250,000 Books
100 Daily Newspapers
500 Journals and Magazines
(Music Media and Talking Books not included)

Section through the entrance, facing south

Plan, second floor

Plan, entrance floor

Plan, basement floor
Axial Map of the City Library of Växjö
Average spatial scale
The City Library of Växjö, Visibility Graph Analysis (VGA)
Average Spatial Scale

Visual Integration, Hillier/Hanson

Visual Control

Visual Clustering Coefficient

Visual Controllability
4.3 Spatial analysis of the libraries

Libraries have long had a strong symbolic role in architecture and society, and have repeatedly been the focus of much effort and invested prestige. They have also been assigned a number of symbolic roles, and been given the task to express the view of knowledge and literature, as well as how to relate to this, both in their external form or expression, in their volumetric and spatial composition, in the way they have ordered literature and knowledge and how the spaces within have communicated the way in which knowledge, learning and literature is to be approached.201

The perhaps earliest appearing symbol, the Library in ancient Alexandria, is the library as a symbol of knowledge,202 both in itself and through its contents. With this library as its origin, a type emerged for libraries. This type was based on domed centric spaces - important metaphors for universal knowledge. Initially containing both books and other objects of knowledge, the concept of library also serves as a prototype for subsequent buildings with similar symbolic roles – museums and art galleries – and as an important part in the forming of the view of both culture and knowledge for the general public.203 As such, they have also been important displays of power, and the power of knowledge and those owning it.204 With the advent of printing and resulting mass of books, however, a need for public libraries appeared – both causing and caused by changing reading habits. One role of these public libraries became helping the ‘unknowing’ to find their way in the masses of literature.205

For a long time, the expression of power was transferred to these public libraries, even though these were partly symbols for the availability of knowledge, or at least literacy, to everyone. As an early example of opening up of the libraries to the public, Karin Winter claims that the expression of entrances of Asplund’s City Library in Stockholm is signalling openness and that everyone is welcome, even though the library is closed and guarded in its general expression.206

204 Ristarp, Jan, Syns demokratin utanpå? (In Gran, 2002).
205 ‘[...] ’...to be well supported by the lower classes, the library must contain books that a narrow-minded librarian might consider only amusing and he must have the power to deny certain books to youths and ladies’. Markus (1993), p. 185.
206 Winter, Karin, En läsbar ordning. Om Stockholms stadsbibliotek och det svårhanterliga mötet mellan en gestalldad ordning och ett föränderligt yttre (In Gran, 2002).
Over time, (public) libraries have become symbols of democracy and an open society – the possibility for everyone to take part of the collected human knowledge. They are an important democratic institution and an expression of everyone’s right to learn.\(^{207}\) Through providing the public with literature, the power of knowledge becomes available (more or less) to everyone – at least in a symbolic sense.

A library, further, is also a ‘temple of knowledge’,\(^{208}\) a powerful symbol of one of the greatest and most important inventions of mankind – the written word, without which civilisation could hardly exist. As such, they also serve to represent the idea of knowledge – how it is structured, what its characteristics are, who it is for, \textit{et cetera}. As western society has moved further into democracy, and into the information age, two tendencies have been apparent in the design of public libraries; the tendency to be more and more designed to represent openness – glazed walls, welcoming entrances, cafés etcetera – and the tendency to be more and more built as large halls.

The way in which knowledge is produced and communicated has also had its impact on the design of the interior of libraries – moving from a representation of reverence, silence, devotion and deep studies towards communication, exchange, ease of access, flexibility and knowledge as produced through human interaction as we move into the ‘information age’ or the ‘network society’.\(^{209}\)

Let us not, however, forego the coming discussion. The point as of now is not to discuss the symbolic role of libraries in depth, their meaning in society or in what way they produce and reproduce ideas, power and meaning, but to briefly paint the picture of the both symbolic, metaphoric and social role of libraries as bearers of culture and meaning as a brief background before introducing the three libraries studied.

\section*{Introducing the libraries}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{city_library_of_stockholm}
\caption{The City Library of Stockholm, follows the internationally established way to build prestigious public libraries at the time of its construction,\(^{210}\) with book halls forming a square composed around a central round hall. It is, as Hans Asplund has stated in his motivation for the rebuilding plans he presented for the library in 1968, “from an architectonic point of view regarded as the foremost work of neo-classicism in Sweden and is characterised by a characteristic exterior, beautiful internal spaces and an easily graspable plan.”\(^{211}\) Considered as one of the prime examples of Architecture in Sweden, it is a temple of knowledge in every sense; from the entrance up the long stair, through the path leading up into the light of the rotunda – a symbol of universal knowledge – to the reverential atmosphere in the library halls.}
\end{figure}

\begin{itemize}
\item \(^{207}\) Linn, Björn, Biblioteket och staden - en modell och en moral (in Gran, 2002).
\item \(^{208}\) Hodaszy-Fröberg (1998).
\item \(^{209}\) See e.g. Manuel Castells, \textit{The Rise of the Network Society}, 2000, for a more thorough discussion on the development into an ‘information age’ or a ‘network society’.
\item \(^{210}\) Winter (in Gran, 2002).
\item \(^{211}\) Cederström, Lena; Söderblom, Hariette and Törngren, Margareta, Bibliotek i Storstad, from Olsson, Lars (ed.), \textit{Acta Bibliothecar Regiae Stockholmiensis – Svenska Biblioteksbyggnader från förrvaring till möteplats, 1989}, my translation.
\end{itemize}
The City Library of Malmö, the ‘Calendar of Light’, by Henning Larsen, is designed around daylight in different ways, and consists of three volumes placed perpendicular to the entrance. The entrance is spacious, with walkways hanging more or less free through it with balconies where people can sit and watch the movement down by the entrance. The book return desk and a number of information desks are also clearly visible and easily accessible. Once entering the library, one is directly presented with the choice to either continue straight ahead, into the cafeteria, or to head into one of the volumes – the old building containing books on art, music and literature as well as fiction, drama, lyrics and music, or the new building, containing literature on social sciences, humanities, natural sciences, technology and economy. Once inside the building, moving between the volumes is easy – it is one of the themes of the architectural design.

The City Library of Växjö, where the original building of Uluoto – the first open-plan library in Sweden – has been added to in a “…high-level geometry game, one worthy of a scholarly library, yet not out of place in its present more popular function.” 212 Inside the entrance the open space of Uluoto spreads in all directions, and the movement leads forward into the new building, up a flight of stairs crossing the circular atrium, up into the circular, glazed main library room in the new addition. Close to the university library, a conference centre and the centre of town but situated as a pair of solitary volumes in a park, it is a landmark in the city of Växjö.

The libraries as objects

A common theme of all the libraries is their clear exterior geometry – most often responded to on the inside. Each is composed of clear and simple geometrical forms in relation to each other – using the same basic components but arranging them in its own way. Stockholm is a cylinder in a cube, in concept and in form. Växjö is a cylinder following half a cube. Malmö is two cubes with a cylinder in-between. Though not the focus of the methodology developed herein, this is still unavoidably a fundamental part of their form, which also has implications for and set the limitations on how space within them can be designed. It is, however, not the case of a one-to-one relation between outer form and inner system, as will be shown below. Still, the pureness and simplicity of the volumes (or mass) of the libraries will help understanding and discussing the spatial – and also forms one of the grounds against which some of the observations and relations are tested and from which support is gained for certain conclusions.

Erik Gunnar Asplund’s *City Library of Stockholm*, after a long process finished in 1928, is a masterpiece of its time with one foot firmly in the classical tradition and the other in the modernist movement. As a project, it is signifying for Asplund’s own advance into modernism.\(^{213}\) Consisting of a clearly classical composition, based on a *type* for public libraries\(^{214}\) of a square and a circle set together which evolved internationally under the 18th and 19th century, the simplicity of the façade and interior was not intended in the original proposition, but emerged as the project took its time to be completed.\(^{215}\)

The simplicity of the exterior – the only embellishments being around the two stories high entrances – is followed in the interior by clean surfaces and simple geometries, providing a close resemblance between interior and exterior. Again, in the interior, the only noteworthy embellishments are in the main stair up to the central hall. The artefacts are worked into the very walls of the library, where shelves are directly built into the building walls.

The large and high windows – though not allowing visitors to look out except where they function to extend one of the main axis’s in the building – at daytime provide enough light for reading on their own, while their high placement protect the visitors from direct sunlight.

As one of the symbols for the ‘new Malmö’, of which an important part is knowledge and education,\(^{216}\) among the tasks for the *City Library of Malmö* are educating the public, covering and showing works made by local authors, as well as functioning as a ‘House of Culture’ in general.\(^{217}\) For this, an addition to the city library was built in the 1990’s with a plan based on the basic form of the old building with a diagonal displacement, containing a four stories high library hall with large, glazed façades that open up towards the park.\(^{218}\) This grand hall is one of the more magnificent spaces in Swedish architecture in the 1990’s – followed through from conceptual idea from the competition in 1992 to its completion to a remarkable degree. Even to the degree of causing some problems in the hot summer months of southern Sweden, when the sun gazes upon the enormous surfaces of glass, forcing the use of big, greyish curtains – somewhat spoiling the concept.\(^{218}\)

Used in different ways in the different volumes, daylight is the central theme around which the entire addition is designed – indeed, the new main building is called the ‘calendar of light’, alluding to how the building interacts with the season through its use of daylight.

The design of the addition to the *City Library of Växjö* has, compared to the library in Malmö, closer and more apparent resemblances and similarities between the old and the new buildings. The same simple use of materials and clean surfaces – stone and glass – is shown in the exterior of both buildings.

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\(^{213}\) Trachtenberg/Hyman (1986), p. 556.
\(^{215}\) According to Hodaszy-Fröberg, Asplund was strongly against the simple expression of the exterior, calling his own building the ‘poor city library’. Hodaszy-Fröberg, (1998).
\(^{216}\) Not long after, a University was started in Malmö, which has been quickly growing and given a central location in the city, symbolising a future for a town where the traditional economy was in recess.
\(^{217}\) The Library’s annual report, 2002.
and the theme of the façade is recognisable in the interior composition. The proposed main movement inside, through the entrance floor in the old library up to the upper floor in the new building, is also evident in the exterior expression, the glazed parts describing such a sequence. The pillar system of the old library is also allowed to continue through the new.

Further, providing you accept the notion of the circle as being an inversion of the square, the concept of the new library – to a remarkable degree – can be studied as a series of inversions. The old library is open to the public, and has its main public spaces in the entrance floor, with private spaces for the personnel on the upper floor, answered to by the expression in façade materials, while this is inverted in the new library – placing the main body of literature on the upper floor – a distribution of emphasis followed by the glass motif in the façade. The composition of Uluoto, a set of squares within a square, complemented by a few circular shapes, is inverted to a set of circles within a circle, complemented by a few squares. The atrium returns in both buildings – though in slightly different forms.

Uluotos library, built in 1965 and the first open-plan library in Sweden, is still to some degree the more spectacular, however. The ‘never-ending’ space floating out in all directions as you enter – to some degree blocked by screens or other interior solutions, but still strongly present – is one of the more memorable experiences of the library, even if the changes brought to it by moving the library proper to the new building has, according to Thomas Lauri, lead to some solutions in interior design and furnishing that are not completely satisfactory.

The libraries as spaces

Henning Larsen, the architect of the City Library in Malmö, describes the library as follows; “[...] Originating from the form of the old library building and its placement as a solitary volume in the green space of the park, the new library is a revision/adaptation of the same theme. The composition consists of three freestanding volumes – the old library, the central and cylinder-formed entrance building and the new, large library building – connected by light glazed-in passageways.”

This is a very simple and telling description. It is also a conceptual description – ‘the three bodies’ is the concept and idea of the library, followed through to a remarkable degree. It is, however, a description of the exterior – a description of architecture as object, volume or mass.

How, then, would a spatial description be made – with the intent of making an as principal and conceptual one as the one of the three bodies,

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220 As a metaphor if not in actuality, this serves to understand the concept and principles behind the design of the new building.
222 Larsen (1997), my translation.
223 Linn (1997).
describing the library as spaces, as few and as possible yet still capturing the essence of the library?

There are some distinct spaces that can be found. The main hall in the new building for one – the large, four-story hall with glazed façades to the park, and then the main hall of the old library. This, according to Björn Linn, is “the strongest library space in Sweden since City Library of Asplund”.\textsuperscript{224}

Then, however, the ground floor and the rest of the new building is clearly separated from each other, the lower forming a conference and logistics space, and the upper the library. The new building can further be divided into the main library hall and the more closed sections – where the closed section further divides in office space and library space. The old building divides into an upper part – the top three stories – and a lower part – the children’s library, since the upper three are connected through a glass-roofed atrium. Finally, the entrance chamber can be divided into the entrance hall and the floors above – based on the structure of the communications. This would give a spatial description that can be illustrated as in figure 4.3.

Note that this is not intended as a less conceptual division than the three bodies, it is simply a spatial rather than volumetric or mass-based description. Notably, while there are still horizontal divisions into three (or four) bodies, there is another division that rather clearly emerges – the ground floor.

In Stockholm, the first space that meets the visitor is the two stories high and glazed entrance, according to Winter intended to symbolise openness and democracy,\textsuperscript{225} which one encounter after a walk up a long stair from Sveavägen. Once inside, the walk upwards continues, through a dark staircase surrounded by reliefs in black stucco visualising scenes from the Iliad – the first written work in western culture. Already from the outside – almost all the way from Sveavägen – she continues, it is possible to see the end of the staircase, bathing in light. The walk culminates in the centre of the circular main hall of the library, several stories high and with large windows high up filling the hall with light and a sense of air and volume. The references to Pantheon are further emphasised in the texture on the floor – though in the case of Stockholm translated into a linoleum mat.\textsuperscript{226}

Along the wall runs three stories of bookcases, reachable through balconies, and in the centre of the hall two axes cross each other – that of the stair and entrance, leading forward into one of the book halls, and that leading between the two larger halls of factual literature.

\textsuperscript{224} Linn (1997).

\textsuperscript{225} Winter (in Gran, 2002).

\textsuperscript{226} This description loosely translated from the description given by Winter (in Gran, 2002).
The library then reaches out in branches of halls, filled with literature and seats for private studies, all with a high ceiling, books embedded in the walls themselves and with windows high up letting the daylight in from high above. As a general impression, the City Library of Stockholm is a manifestation of the library as a space for reverence ‘between silence and light’, as Vilma Hodaszy-Fröberg describes libraries in general in her work with the same title.\textsuperscript{227}

The order and clarity of the original work, however, have been somewhat diminished as time has passed and the amount of visitors have risen beyond the intended capacity for the – relative to the size of Stockholm – comparatively small City Library. Elevators have been put in, and though necessary additions, creating unintended routes through the library and spatially and aesthetically less pleasing results. The amount of literature has also swelled well over what the building was designed for. As a consequence, the magazines and newspapers, as well as microfiche, have been moved to another building, situated just to the west of the main building, and in the bottom floor the northern entrance and accompanying spaces – originally intended for personnel – have been opened to public access and contain a section for talking books. Finally, the children’s section – once confined to its own part with its own entrance to the south, has been opened up to the rest of the library, and the separate entrance leading to the park has been closed.

When studying the spatial composition closer, however, the cube and cylinder shape implied by the outside, gives way for a cylinder surrounded by long, rectangular shapes composed into the outer form of a square.\textsuperscript{228} Each of these shapes form their own, separate section, connected through the main hall – with the exception of a small link between the west and southern halls, its odd existence emphasised by the placement of a door in the opening.

Further, there is a significant separation between the ground floor, containing the children’s section and the talking books (and at the time of the study a now non-existent bookstore) and some other facilities, such as toilets and machines providing coffee, soda and some snacks.

As noticed above, the expression of the exterior of the City Library of Växjö, at least at the conceptual scale, seem to be responded to in the interior space to a remarkable degree. Volumetric and spatial descriptions turn to be highly similar – except for the basement floor, where some solutions cause ambiguous situations. The same can be said about the old building – the square of Ulitto is strongly represented inside, and in both buildings there is a more or less obvious connection between the glazed parts of the facade and the content inside. The directionality seen in the composition is also one of the defining traits of the interior, leading people up into the upper floor of the addition, if not by the stair, the thing waiting next in line along the axis is the elevator.

\textsuperscript{227} Hodaszy-Fröberg (1998).
\textsuperscript{228} Winter (in Gran, 2002).
The libraries as spatial systems

Thus the libraries have been presented as spaces, primarily on the conceptual scale. The investigation can now move further, reaching to the libraries as spatial systems – as such analysis is an important part of the methodology herein presented. Some of the graphs (axial maps and visual graphs) can be found in the ‘fact sheets’ of the libraries and will not be presented again – the following is however largely based on these graphs and studies of the convex space systems of the libraries, which will be presented as figures where appropriate.  

The most apparent pattern of the spatial system analyses is the tendency towards a tree-structure in the City Library of Stockholm – the visibility-, convex space- and axial analyses all produce a picture of a central space branching into more and more segregated spaces, the integration core more or less turning into a cross which arms are further developed into crosses. (See the axial map, the integration analysis of the VGA

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As for the treatment of the basement floor and archive, once by the atrium, if you choose to look down, you are today met by a sense of emptiness and a few screens that feel more or less out of place, while the archive is hidden away behind a strong steel door deep into the basement.  

The placing of the ‘objects’ in the new library is also, according to Lauri, problematic. Though at a first glance done playfully, they are, he states, not as convincing once experienced in the actual building, creating narrow passages, preventing the contact with the park suggested in the exterior, and the main, circular spaces of the new building are not allowed to reach their full potential of spaciousness.

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229 At the date of visit, though most of the literature was by then brought into its place, according to the personnel working at the library. One can here wonder why the opportunity to display a mass of books as the foundation for the library was not taken, and was instead replaced by an insecure and unexplainable feeling of emptiness, while the archive is locked away behind steel doors.


231 The Justified Graphs are made using an application called ‘JASS’ developed in the research project. See appendix a.
and figure 4.6) Further, the degree of spatial control is high and focused around a small set of points close to the passageways, and even more so in the lower sections – those for the talking books and the children. The system evolves in a basically symmetrical manner, meaning that the order of the system as a whole is constantly readable in the parts of it – the intelligibility, to use Hillier’s term – is high.  

Further, the spaces show a remarkable degree of convexity (see the clustering coefficient analysis in the VGA section), once inside a hall its boundaries are very clear and the patterns of co-presence are stable as you move around within each space, save for in the entrance.

The irreducibly three-dimensional character of the central rotunda, combining visual co-presence with spatial depth, is a case in itself, providing both problematic and interesting questions. These, however, will be dealt with later. For now, suffice to say that the balconies, at first thought part of the central hall of the system, at closer inspection turn out to, as far as accessibility is concerned, be the deepest part of the system, regardless of form of analysis.

Though altered and somewhat skewed, the system is well ordered, symmetrical and presumably easily read and comprehended.

![Figure 4.7 – The Justified Graph of the convex space system of the City Library of Växjö, basic spatial scale. Note the](image)

When studying the interior system of the City Library of Växjö a bit closer, the circular form of the addition is somewhat put into question. In more than one place, an attempt to follow the circular form of the expression is hindered by more or less easily understood walls or objects. There is also a very strong directionality in the library, as noted above, leading upwards, up the stair, into the upper floor. In one way, however, the idea of circularity expressed in the form of the library is maintained in the spatial system – there are, except for in the basement, few actual cul-de-sacs in the new building, but rather an emphasis on ringiness, even if some of them have a tendency to be a bit awkward in part.

Further, there is a remarkably strong axially in the building, created by the relation between the stairs, elevators and the composition of the volumes compared to the entrance. Aside from the apparent axial maps, this tendency is emerging in all analyses of the visibility system as an axial tendency from the entrance leading to the stair up.

Another, quite interesting, emerging property in the system is its tendency to produce tree-like or serial structures. Both the integration and

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232 See e.g. Hillier (1996).
234 Actual mathematical trees are only connected with one connection to one node in a shallower part of the system, and thus contain no rings whatsoever. As for the term tree
control patterns, both in the visual and axial analysis, have cores producing at first a series leading up to the upper floor, and on each floor a shallow tree system rather than a circular system. Interestingly, there are tendencies in the movement patterns to follow these emerging tendencies. This, however, will be discussed in some depth later on.

In more ways than this, however, the lower floors are obviously not the focus of the library, but rather the top floor and the procession towards it. Or as Tomas Lauri puts it: ‘[...]the contrast to Ulutos modernistic idiom is clear: communication between the floors, the movement of the human body up and down – rather verticality than horizontality, rather classical axes and clearly directed spaces than general spaces.’

Turning, finally, to the different configurative analyses of the library in Malmö, some observations can be made already at an early stage. One is the central role of the horizontal connection between the volumes, clearly showing in both the axial analyses and in the visibility graphs – especially when it comes to integration. Another is the distribution of control, together with the integration, clearly showing a pattern of strategic points of choice and connections between them. As for the Axial map, there seems to be a significant difference in the amount of lines between the basic spatial scale and the average, while adding more details after that follow the same pattern as the average detailing, only in a finer grid.

Both the axial analysis and the visibility graph analysis speak of two spatially different buildings – one of well defined, convex spaces, clearly ordered and demarcated by walls or bookcases into distinct spaces, and one of a more floating character, where space is built up in complex relations of shelves, walls, furniture, positions et cetera. Worth noting is that the studying places in the new library are separated from the most floating and open spaces by more defined ones, as is clearly readable in the control and clustering properties of the great hall. This differs the Malmö library from the two others – in both Stockholm and Växjö what defines spaces, and the role of walls, shelves, furniture etcetera, are consistent throughout the library, providing similar kinds of spaces all-through.

If we turn to the convex space analysis, it soon becomes apparent how complex the spatial system of the Malmö library is. While producing an intelligible image of the system in Stockholm and Växjö, it is in Malmö virtually impossible to sort out a justified graph from the entrance, and connections and spaces run across each other in such a complex way that the justified graph becomes virtually unreadable, except for some emerging observations – the separation of the children’s section, and the fourth floors. This in itself, however, says something about the libraries and how they are built as spatial systems.\footnote{See the especially clustering coefficient graph.}

\footnote{Tomas Lauri (2003).}
\footnote{It is not the case, as might be thought, that this is a result of the sheer size of the City Library of Malmö. Even if size do have a tendency to produce complexity in spatial systems of buildings, the difference here found is larger than either can or should be explained by ‘size’.}

\footnote{Lauri (2003).}

\footnote{See the especially clustering coefficient graph.}

\footnote{It is not the case, as might be thought, that this is a result of the sheer size of the City Library of Malmö. Even if size do have a tendency to produce complexity in spatial systems of buildings, the difference here found is larger than either can or should be explained by ‘size’.
Another trait where the spatial systems are different is in the kinds and degrees of control. In Växjö, there is a very high degree of visual control – control performed through visual contact between spaces – while the degree of spatial control – control by means of controlling bodily movement – is low. This, partly an effect of the intended openness and spaciousness, creates a pattern of spaces where every movement is possible to follow, and produce a ‘chain of control’ – a non-interrupted path of high visual control – in the entirety of the main communication spaces, something distinguishing the library in Växjö from both other libraries.

In Stockholm, as a comparison, the degree of visual control is also high – though not as strongly connected to the working places of the personnel. Here, the dominant mode of control is instead spatial control, where movement routes are lead through a small number of ‘bottlenecks’ where everyone must pass.

Compared to the other two, Malmö has a very open structure, both on global and local level, where both visual and spatial control is generally lower than in both other libraries.

The libraries in use

Though something to be returned to over and over in the coming, the basics of the relations between spaces, spatial systems and use need be presented before the coming discussion. This to set the stage for the coming analysis, and to in a coherent and simple manner present these relations in a fairly easily graspable manner before problemising them to the degree that will be done later. The basis for the following analysis is extensive on-site observations, analyses thereof, spatial analyses and analysis of their relation to each other, encompassing close to half of the work behind the thesis – and also a vital foundation for the following application of the methodology.

To a large extent a result of the movement patterns emerging in the libraries, there are several observations that can be made concerning the relation between spatial configuration and social behaviour, such as where interaction takes place and where people go to seek privacy. They will, for reasons that will become clear, be presented before the analysis of movement patterns, and in the forms of a number of general observations described through examples.

Privacy and social interaction

First, thus, the patterns of interaction and privacy observed in the libraries, and the relation between these and spatial configuration, will be presented. This will be done subdivided into two basic activities found in the libraries – the reading of books and the interaction between people, both coupled to configurative properties found to correspond to these basic forms of activity. The basis for the following is, as stated above, extensive observation data on how and where people interact, stay for themselves, read, et cetera.

Integration and reading habits

The distributions of social interaction and privacy tend to follow spatial properties in a number of ways, which will be presented in the following. The first to be studied is one of the main functions in a public library – the use of the places for study.
number of reading places set especially to provide a view.\textsuperscript{238} This is perhaps not too surprising, what is noteworthy, however, is that the choice of seating not necessarily is based on closeness to the literature that is to be studied,\textsuperscript{239} which is interesting because of what it says about where and how people choose to study – it is as much a choice of social factors (passers by, number of people close by et cetera) as a choice of closeness to that which is being studied. This is an important observation to keep in mind for the coming discussions, as the distribution through space thus serves as a strong factor in what places of study are used in which way.

\textsuperscript{238}The ‘shelf’ is the three-story ‘object’, imitating a set of shelves, that stretches out along the glass wall in the main hall, as can be seen on the lower left colorplate of the library.

\textsuperscript{239}Something that has been observed in several snail-trail studies. It is, however, different in different libraries – in Stockholm, there is a closer relation between literary genre and seating than in Malmö or Växjö – something that may very well be a result of the spatial configuration itself.
Second, the study places closer to the highly integrated spaces are more often used for interaction – especially when there are small groups of study places, where discussions can be held with relative safety from disturbing others. The studying places deeper (or less integrated) in the system have a tendency to be less used, relatively more used by single persons or smaller groups relative to the number of seats and for more private reading, as observed interaction is less common on these locations (see fig 4.9 and compare to fig 4.8 above).

Worth noting is that the study places in Växjö – which almost throughout the entire library do not follow the spatial characteristic found to be attractive above are significantly less occupied than those in the other libraries. This may also be a result of lower amounts of visitors per seat, but the comparatively similar amounts of both in Växjö and Stockholm seem to indicate that there is more to the phenomenon than that – of which the distribution of study places in space might be one factor.\textsuperscript{240} The places for study in Växjö tend to be contradictory in intended use and spatial position, e.g. designed for social studying but in spaces far from the integration core or places for ‘private’ activities (such as computer terminals) but in the integration core.

\textit{Control, integration and social interaction}

Further, there seems to be a preference for a fair amount of control, and perhaps more significantly, more control than controllability, both for the choice of place to sit and for where people stop to interact or just stand for one reason or the other. Adding to this, nodes of high control and high integration (and in the case of axial lines many intersecting lines of high integration) tend to produce both interaction and ‘non-movement’ – as people often stop for a shorter or longer while at these nodes. In a simpler way of stating it, strategically important nodes for movement in the system also become nodes of spontaneous interaction.

This – the relation between integration and interaction – is an important part of the following discussion, even though it also could be viewed as a logical result of the movement patterns. It does show, however, that by analysing movement patterns and comparing them to distributions in and of space, we indirectly analyse the potential and resulting amount of social interaction.

\textbf{Movement and movement patterns}

The analysis providing the highest correlation between spatial integration and movement, in all three libraries, is the axial map,\textsuperscript{241} and in all three libraries on the level of \textit{global} integration. As a general tendency, the correlations are highest at the basic spatial scale, followed by the average scale and then with a rather large difference down to the detailed scale which has the lowest. This, generally, even when the same observations are considered in the models and scales.

\textsuperscript{240}This will be elaborated upon in the coming, The Distribution in Space.

\textsuperscript{241} Above, Social Space and Social Relations.
The Correlations are around 50-55% in all visibility graph analyses, and between 50 and 65% for the axial maps, generally with increasing correlation the less detailed the scale. To some degree, the observations correlate best to square or cubic integration and to global integration, even if this pattern grows less important when the observations in the entrances are removed. The values given are the correlations found if the observations at the entrance are removed from the calculation, if they are included; the correlations reach up towards 80%.  

This said, the correlations of the visibility graph analyses are also fairly good and thus, depending on what is sought after, could even be of greater use, since they can say more about movement in a particular location. There is, however, in all three libraries, a strong ‘axiality’ in the patterns of movement produced.

**Malmö City Library, correlation between integration and observed movement.**

<table>
<thead>
<tr>
<th></th>
<th>Basic Scale</th>
<th>Average Scale</th>
<th>Detailed Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axial Line Analysis</td>
<td>63.8%</td>
<td>60.76%</td>
<td>49.7%</td>
</tr>
<tr>
<td>Visual Graph Analysis</td>
<td>32.3%</td>
<td>32.9%</td>
<td>32.3%</td>
</tr>
<tr>
<td>VGA, quadratic*</td>
<td>50.9%</td>
<td>52.9%</td>
<td>51.4%</td>
</tr>
</tbody>
</table>

*the “quadratic” stands for correlation to a line following a quadratic equation. This calculation also takes the measurement in the entrance into account, which generally has a strong effect of increasing correlation.

The high emphasis on global integration, and the fact that an addition of an exterior system is needed for the correlations to be found, might be caused either by the function of the buildings or by its situation in the cities. I propose, however, that it indicates more than that – namely that they in some ways works as extensions to the exterior system of public space. As being *publicly accessible* – available to everyone without any form of payment – they could in certain ways be considered part of the urban fabrics just as well as

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242 The correlations, here given in per cent, are the R-square values calculated on global integration and observed movement. The reason for giving the values in per cent instead of in decimals as the calculated value is, is that it is said that such a degree of the movement pattern can be explained. If the R-square value is 0.5, 50% of the movement in the system can be ‘explained’ or ‘understood’ through the analysis. Hillier (1996).

243 The strongest correlations in the axial line analyses, further, are reached when the analysis is based on a ‘max-max’ procedure – when the most integrated line passing through a gateway is assigned that observation value, and when such a line passes through several gateways, the highest observation value a line passes through is the one chosen. This possibly indicates that the character of the space represented by axial line to a large degree is defined by its highest potential – or at least that when comparing gateway observations, they need lie at a part of each axis of reasonable same character as others. This is further supported by the analysis results from Stockholm – where observations made at gateways lying in a more ‘shallow’ and reasonably less attractive part of one spatial branch was consequently lower than those made on a more deep and attractive part of the corresponding axes of another spatial branch. An ‘average integration’ analysis of the gateways and the axial map has been performed in Malmö, and that it too provided a strong, but not as strong, correlation.

244 In both models of analysis, correlations occur only at the global level and only when an exterior of considerable size is added to the system - with the exception of Väsjö, which has the peculiarity of being built in such a way that the integration patterns are hardly affected by the exterior – the main integrating lines are still the same. Still, there are some indications of the exterior system having effect also in Väsjö, as movement within the main integrated space grow larger towards the entrance. This, at first, raises the question whether it is simply a question of correlation between movement and spatial depth, but it turns out that though the integration and depth patterns are somewhat similar in their patterns, the correlations are highest compared to the integration.
being treated as a set of spaces contained in a building. Thus, the patterns of movements and how they relate to the spatial system of the buildings is reasonably different from a building primarily for those within the building – a private, or public, ‘contained’ building.

The Scales in Use

Through the three libraries, different scales tend to give higher or lower correlations depending on what library is studied, or even what part of e.g. the City Library of Malmö is studied. Further, as e.g. the VGA analysis is not always centred on movement, the highest correlation between movement and spatial configuration is not always what is most important, as long as the correlation is fairly strong. Thus, different scales will be used as reference since they give answers to different questions and different situations. There is a tendency for the two less detailed scales to provide higher correlation, but this is a complicated question which will be dealt with in depth in the following. There are also reasons to use scales of analysis which provide a higher amount of observed gateways, as they become more statistically valid. With a high correlation, the stable ground of more data in e.g. the analysis of the average scale in the City Library of Stockholm, combined with the fact that the drop in correlation is rather low between the two scales, makes it preferable to use in some situations even when movement is discussed.

There is much more to be said about the spatial scales, however, and it will be returned to extensively in the following. For the moment, the point has been to introduce the correlations between spatial configuration and movement pattern in all three libraries in an easily graspable manner.

The production of literary behaviour

The question can by now be raised, whether the observed correlations between movement patterns, study places, interaction et cetera and configurative properties also have an impact on what literature is read or borrowed. Though a difficult task to answer – there are many factors to take into account when analysing this – some things can be said already at this stage.

245 Something that is supported by the results of two (forthcoming) thesis’s from the research group spatial analysis at the KTH School of Architecture concerning offices by Johanna Wiklander and Magnus Blombergson.

246 In the coming, the reference will throughout be The City Library of Malmö, since this is the library where this investigation has reached the furthest.
First, and most significantly, in Malmö all of the books on the ‘top ten list’ of number of loans can be found on several locations in the library, where mostly at least one is highly exposed. Be it factual books, fiction or music media. Thus, they are more exposed than similar books not placed on several places in the library, and hence more loaned.

Secondly, the librarians use spatial distribution to reach people with either new or popular literature, or sometimes other themes they feel like promoting. Typically, such literature is placed on shelves by highly integrated passages. The reasoning in this, naturally, is not to put them in ‘highly integrated locations’ but more a result of tacit knowledge and trial and error over time. The locations, however, coincide well with the pattern of integration.

Thirdly, as for the library of Malmö, there is a distinct tendency for the overall ‘genres’ or ‘types’ of literature to have a circulation corresponding to the general integration of the spaces in which they are located. At the most basic level, Humanities and social sciences has an average circulation of 5.21 loans per book and year, Arts & Music 5.15, Nature and technology 5 and Fiction and Language 3.97, providing a correlation between spatial configuration and loans reaching close to 60%.  This follows the integration pattern very closely. If the latter – Fiction and Language – is divided into what is on the third and fourth floor, the correlation grows even stronger for all parts except the top floor, which has a remarkably low circulation of books. This, naturally, is partly because of what literature is put there. At the same time, however, the fourth floor is the only floor that has cul-de-sac tendencies, whereas all the other floors are reachable through the network formed by the integration core.

A more detailed analysis of the ‘literary behaviour’ in the libraries and its relation to spatial configuration has been postponed somewhat, awaiting the development of the Place Syntax Tool, a tool for analysis of accessibility and availability in configurative systems.  

Thus it seems that, as logic might indicate, the spatial distribution of literature has an effect on what is read in the library. The point here is that this may very well apply to a larger degree than perhaps believed – and include such overall ‘types’ or ‘genres’ as presented above. The reason for bringing this up, however, is primarily to lay the empirical foundation for a discussion to which I will return in the distribution through space.

Spatial scales

The fact that movement and integration correlates best on basic spatial scale is telling us something of both the nature of (axial) space and of movement in the libraries. It seems like there is one kind of movement – or parts of movement – that is related to the basic spatial scale, where more detailed levels of subdivision do not really affect the choice of route. This, however, is not the whole truth – for two reasons. One being that correlations do occur on more detailed scales. The other being a lot more complex.

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247 Figures are from the media investigation performed for the library.
248 The Place Syntax Tool is an application for Mapinfo that allows several different kinds of ‘availability’, in several different ways of calculating the same. The tool is developed as open source application by Alexander Ståhle and Lars Marcus as a part of a research project at the research group Spatial Analysis at the KTH School of Architecture. A paper on the tool is forthcoming.
A case in point to introduce the discussion on this second reason is the axial analysis of the spatial systems of the City Library of Växjö. When comparing the analysis of the detailed and average scale in this case, an interesting phenomenon occurs – in the detailed scale, two parallel distinct correlations seem to appear (see fig 4.12.a) while in the average scale there seem to be only one (fig 4.12.b), even though two can seem to be existing, vaguely reminiscent of the two in the detailed scale. Studying the observations and their relation to integration closer, by investigating the spatial position and properties of each gateway, it grows apparent that those observations with lower observed movement (per integration) belong to gateways which spatially are defined by objects existing only in an analysis of the detailed spatial scale, while those with higher observed movement (the upper line) are lines which run through gateways defined by objects belonging to either basic or average spatial scale.

Thus, it could be argued, the observations ascribed to the lower line are capturing movement in spaces specifically defined by the detailed spatial scale, while those in the upper are capturing movement that occurs in spaces that are defined by the average or basic spatial scale.\(^{249}\) This could, one could speculate, be applicable as a general phenomenon of levels of space and movement – thus different kinds of movements would actually take place in accordance with different spatial systems in regard as to how they are generated and understood – and hence should be analysed.\(^{250}\) Further, the scales would exist simultaneously in buildings and cities, where the one taking precedence would be the one corresponding to the individual movement performed. If this is the case, similar sets of several different correlations differentiated by spatial scale must be possible to find in the other libraries.

If we, hence, turn back to the other libraries to investigate this, the same phenomenon occur, though less obvious. Beginning in Stockholm, where the question of to which scale each observation belongs is most easily answered, each gateway can be assigned as belonging to a certain scale, and then correlations can be calculated individually per each scale.

It turns out that, actually, the correlations are higher for both scales used for the subdivision in the case of Stockholm (see fig 4.13 a and b).

Once again turning back to the Library at Växjö, where the investigation began, and performing the same kind operation, the same pattern emerges – two correlations appear which individually have higher correlation values than the correlation of where all observations where taken into consideration at once (fig 4.13 c).

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\(^{249}\) The idea of spatial scales is not completely new, though perhaps not empirically tested in this way. Scales of space are handled both by Hillier, though the scales he uses are defined in another way, and by e.g. Stephen Read and Luki Budiarto. Read/Budiarto, Human scales: Understanding places of entring and de-centring, 4th International Space Syntax Symposium, 2003.

\(^{250}\) See also below, Spaces and Metaspace – relative scales and the organisation of movement.
It also turns out – as will be developed further below, and which is of importance to this thesis as a whole – that what gateways belong to what correlation is different in the Stockholm and Växjö cases. In Stockholm, the observations of gateways belonging to the average spatial scale follow the observations of gateways belonging to the detailed spatial scale, while in Växjö the basic and average form one correlation and the detailed another. The basic scale in both cases, though not always having higher correlation, have a higher amount of movement than the average or detailed scale.

Important, though, is that all these correlations are to global integration. That is, when moving between e.g. low bookcases, the integration of the spatial system as described on the level of detail including these bookcases as spatial dividers are correlating to the movement – but the correlation is still to global integration in the library as a whole.

Further, it must be said that what scale a gateway or movement belongs to is not directly transferable from plan to calculation. The gateways, or axial lines, rather seem to belong to the scale of space in which they hold a strategic role for movement. Thus, in the City Library of Stockholm, when analysing the different scales in a system based on average spatial scale, there are gateways which are defined by spatial borders belonging to the average spatial scale that tend to belong to the movement system of the basic spatial scale. These gateways are always in positions where they are the reasonable route in the average spatial system in which to perform movements on the basic spatial scale.

Finally, turning to the City Library of Malmö, the same phenomenon occurs once again – though a bit more complicated. The basic scale still separates itself nicely from the other scales, and thus far the pattern found earlier is found also in Malmö. The average and detailed scales, however, are more difficult to handle.

Part of the answer to this ties back to the analyses of the systems of the City Libraries in Stockholm and Växjö. Thus far, however, it seems that movement on all scales has a strong tendency to be dependant on the global
integration, and that the local movement pattern is related to the library as a whole, considered as a system of the scale in which the current movement is taking place. There appears to be, in all buildings, several spatial systems at the same time\(^{251}\) working in and through each other to produce the totality of movement patterns.\(^{252}\)

**Spaces and metaspaces – relative scales and the organization of movement**

In the City Library of Malmö, as stated above, the average and detailed spatial scales are more difficult to analyse. One reason for this seems to be the shifting role of the average spatial scale. Most clearly in the main hall the library is significantly different in its configurative character from the other parts of the library. In the hall, the objects defining the average spatial scale tend to have a freer relation to those of the basic spatial scale, at the same time as the difference in pure metric volume or size is larger than in the other sections of the library.

When studying the movement patterns in this hall, some of them seem to follow different rules than in the rest of the library. Aside from the movement through gates belonging to the basic spatial scale, which follows the previously found pattern of correlating to the global integration of the building as a whole, the movement in the parts of the hall where the basic scale of space provide little or no support for movement this seem to not be the case, even when addressing it through analysis of other scales of space.

Rather than following the global integration in the system as a whole, the movement within the main hall seem to follow one, or

\(^{251}\) Which also Read and Budiarto argue for. Read/Budiarto (2003).

\(^{252}\) The same phenomenon of spatial scales exists in the VGA analysis, though not as strong and clear – partly because of difficulties assigning scale to some of the gates in such an analysis.
both, of two basic rules. Either global integration in the hall, extended to encompass the entire floor in the new building (See figure 4.14 a-c, which show the area of analysis), and based on visibility rather than axial properties, or a ‘next-node-connectivity’ pattern in a convex space system. The latter (See figure 4.14 c) meaning that each convex space seem to have the highest rate of movement leading from it into the adjoining convex space that has the highest connectivity.

Reasonably, this has to do with the complex spatial properties of the hall, and the conflicting configurative properties of different scales. A ‘system within the system’ emerges, where movement in the average and detailed scale to a higher degree than in e g the City Library of Stockholm shifts from inter spatial to movement taking place within a space of the basic spatial scale – the main hall. Here, tentatively, there is a space of a basic scale that is dominant or defined enough to alter movement within it to movements within space. There seems to still be a configurative base for movement, but one based on convex spaces or visibility, and which correlates only if considered at the local level. The correlation seem to be either to the visibility graph as calculated ‘locally’ for only the second floor of the Calendar of Light,253 or to the radius two integration of the convex space system (or the connectivity of the next node).254

Other parts of the library seem to follow the previously established pattern, where the average scale follow global configuration in either the detailed or basic spatial scale. This, together with the observations in the City Libraries of Stockholm and Växjö, has further implications.

**Defining Spatial Scales of the Systems**

What then, are the key findings? First, it seems that space works on different scales in different buildings, where different scales become dominant depending on the design of the building – or how the distribution of space is performed. Importantly, however, all scales do work configurationally to affect movement, but to different degrees. Thus, even though the basic scale seems to be of most interest in the City Library of Stockholm, for more detailed discussions, the analysis of the average or detailed scale can be used. This means, that when studying other factors than movement, such as clustering coefficient or visual control, the average scale can still be used since it too correlates well with observations.

It becomes clear, that different spaces and buildings rely on different scales for their use as systems. Though still highly preliminary an observation, there also seems to be a basic tendency of how these scales interact. In buildings where the basic spatial scale provides enough support for orientation, such as in the Stockholm case, the basic scale also provides the primary spatial system in which movement takes place. In the case of Växjö, however, or the main hall in the City Library of Malmö, the basic scale does not provide enough support for orientation. The basic spatial scale does not subdivide space into entities of relevance for orientation. Thus, the importance of e.g. the bookcases reaching above eye-height grow, to a point where they are ‘defining’ the spatial system in which people actually orient and move in, even movement that, formally, would belong to the ‘basic’ spatial scale.

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254 *Radius two* meaning integration calculated with a depth of two configurative steps (compared to e.g. *radius three*, local integration, which is calculated with a depth of three configurative steps. Above, *Social Space and Social Relations – Spatial Systems and Configuration.*
The average and basic scale, in effect, merge into one. We can thus refer to certain scales of spaces as being the defining spatial scale of the system or subsystem.

Hence, for the coming analysis of the City Library of Stockholm, primarily the basic spatial scale seems to be of importance, while e.g. in the City Library of Växjö, the average scale seems to be defining for movement to the same degree. The analyses of the two libraries thus need to be based on spaces of different scales, at least as far as movement is concerned, while the City Library of Malmö needs a more complex approach. Further, as will be shown, the fact that movement is dependant on different scales in different libraries has impact on how the systems are cognized and how they, hence, produce meaning.

\footnote{Below, Performance and Cognition of the Spatial System, where it is shown how movement patterns and cognition of the system are connected to each other.}
5. The methodology applied
5.1 Reintroducing the methodology

Having presented the objects of study, as well as a basic analysis of them as spatial systems in use, the main question of this thesis can be further pursued – that of developing a methodology for the analysis of meaning in spatial systems. This will be performed through the application of the methodology as it stands, and what is learned in this application can then be used to further refine the methodology in both parts and whole.\textsuperscript{256} That is, the methodology as far as it has been developed up till now will be applied, using what has been learned in the discussions on meaning, space and social relations and what has been found in the empirical investigations of the libraries thus far. This before the methodology, as further refined based on the result of its application, will be presented in its for this thesis final form.

Thus the application of the methodology here is somewhat experimental, and will contain some insecurity, incompleteness and constitutes an investigation leading towards its true form – and thus is as much a design process of the methodology as a final application of it. This said, the methodology is developed enough to ensure that through applying it, it will show firstly whether it can make a valuable contribution to the field in the way it aspires to or not, and secondly that applying it will aid in refining it enough to present a ‘final’ version in the following chapter.

Through the following chapters, the investigations of what an analysis of the libraries as distributions of space, in space and through space can contribute to our understanding of them and their role in society will be performed, each analysis using its own methods, as to provide new insights into as well the question of meaning in the libraries as the methodology – both in themselves and as compared to each other.

There are reasons to treat the three distributions in the order herein presented, which partly has to do with the order in which the analyses need be performed. The analysis of distribution in and through space is largely dependant on an analysis of distribution of space. This does not mean, however, that it is in this way either space or meaning is produced. As will be discussed at more length in the final chapter of this thesis, the three are intricately interconnected and dependant on each other, sometimes in different stages, but none of them, in society, exist independent of the other.

\textsuperscript{256} Note that this is not to say that the thorough empirical analysis in the previous chapter, including the on-site studies, are not part of the methodology – indeed, the methodology is highly dependant on the correlation between the spatial systems analysis and the actual use or performance of the building, which will become obvious through this chapter.
Before heading into the discussion, however, it might be of value to repeat that the focus in the following will be how libraries, through their spatial systems, reproduce an idea of knowledge, and how they do so through representing and (re)producing social relations.\textsuperscript{257} Also, it might be of value to briefly repeat the three branches of the methodology that are to be applied:

First, the distribution of space – how space is distributed in itself, e.g. the configurative system. This is one of the key issues for Thomas Markus, as it for Foucault and Lefebvre.\textsuperscript{258} How space is distributed in itself presents, in Ricoeur’s terms, a logic of the world\textsuperscript{259} – a logic of the society or inhabitants which it is to house. The distribution of space, further, works as a sign; presenting an idea of the structure of that which resides in it.

Second, the distribution in space – the location of people, things and events in space. Though fairly common an approach, it is often confused with the former or the following, impeding our understanding of space. By locating objects, subjects and functions in space, we assign status and relations to them, both in general and between one another. Analysing this distribution through configurative means lead to further understanding on its relation to social space, social relations and meaning.

Third, the distribution through space - social relations and norms, social meaning, are, as shown by e.g Butler, to their nature largely performative, they exist in performing them and are reproduced through enaction.\textsuperscript{260} Here, space syntax can make its perhaps greatest contribution – studying space as it is used, or in Lefebvre’s terms lived space. It is here, in the performative, meaning in architecture has been least studied.

Using these three concepts, the methodology presented and applied in this thesis cuts across the traditional triad of form-function-use, providing further insight into how architecture (re)produce meaning in society. Spatial systems, it will be shown, has much more to say than the form-function relation that all too often is considered to be the contribution of space syntax theory, as it is, as e.g Hillier has stated, also a means to understand the production of meanings and social relations in space.\textsuperscript{261}

Thus, though it would be dangerous to draw too far-reaching conclusions based on the configuration of space ‘in itself’,\textsuperscript{262} all three libraries tell a story of knowledge, space, society and culture\textsuperscript{263} – a story that is both similar and different in all three and which is developed through different means as well as their mutual interplay.

\textsuperscript{257} Above, Introduction and On Meaning.

\textsuperscript{258} Markus (1995), Lefebvre (1991), Foucault, Of Other Spaces: Utopias and Heterotopias; Space Knowledge and Power (both in Leach 1997).

\textsuperscript{259} Ricoeur (1982).

\textsuperscript{260} Butler (1990, 1997).

\textsuperscript{261} This is not to say that there is not a discussion on this in the space syntax ‘movement’, that there is a relation between the spatial systems, social relations and meaning is argued for already in the first major work, The Social Logic of Space. There is, however, a tendency that those outside of the space syntax discourse treat it as a form-function theory, and a tendency within the discourse to focus on correlations between spatial properties and spatial behaviour, while ‘meaning’, especially as performative meaning, is given much less attendance.

\textsuperscript{262} Jameson (in Leach, 1997).

\textsuperscript{263} “[…] as it was one of the last attempts to create a unified metaphor for national culture, […]” Markus (1993), p. 179.
5.2 The distribution of space

The first step in applying the methodology in its preliminary state, thus, would be through the distribution of space ‘in itself’ – how spaces are related to each other and to the whole spatial system, and how this both serves as a source of meaning, and how it sets up relations and situations that serves in the production thereof. Being one of the most common ways to address the question of meaning in space as a system, it is proven a valuable and productive means through which to understand how space produces meaning in society.

It might be of value to once again point out, that what is discussed in this thesis is social space, and as such, never free from its social implications or social content. Thus, the discussion by necessity will handle how the distribution of space situates people and things in relation to each other. The focus will be on the spatial relations producing these situations, how spaces and situations are configured, how they are distributed and what meaning or meanings they imply or suggest. Finally, the analysis will briefly be commented by an introductory discussion on how they are affected by their relation to the context in which they are situated, and the question of the means through which the spatial systems are transferred to our minds will be raised, to be further developed in the distribution through space.

In the following discussion, the libraries will be discussed mainly from the point of view of their ‘dominant’ scale, as discovered above – the City Library of Stockholm will primarily be treated as a system defined by the basic spatial scale, the City Library of Växjö will primarily be treated as a system defined by the average spatial scale, while the City Library of Malmö will have to be treated in several scales of space. Divergence from this will be noted.

Further, the spatial systems will be investigated regarded from two perspectives. The first, the configurative system as a sign, and the second, the system as a logic of the world in front of the work. The first will primarily be a discussion on the system as a sign of ‘the other’, and as presented above, the other here considered as knowledge. The second, the system presenting a logic of the world, will be discussed as how it describes a logic in the relations of self-to-others, relations of power and bonds, and how it constructs a narrative of the system. It need be noted that the two concepts, sign and logic of the world, are overlapping each other, and thus what is found in one analysis also has

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264 See for instance Markus (1993), or Foucault (in Leach, 1997).
265 As defined above, Social Space and Social Relations.
266 Above, Spatial Scales.
bearing on the discussion of the other. The division of the analyses is not arbitrary, however, but based on in what ways the system primarily works as a sign, and in what way the system primarily works as logic of the world. Before heading into the deeper discussions on sign and logic of the world, however, some initial observations with bearings on both can be presented.

**Initial observations**

Assuming that the structure of the spatial system somehow represents the view of knowledge and literature, a few basic observations of the three libraries can be made before extensive analysis is performed. At a first glance, the three libraries seem distinctly different – consisting of one (or two combined) volume(s) as in Stockholm, two volumes connected in a line from the entrance as in Växjö and of three volumes placed in a series perpendicular to the entrance as in Malmö. There are strong ‘tree-like’ tendencies in the configuration of the City Library of Stockholm and ‘network-like’ tendencies in the City Library of Malmö. All movement – all space – in Stockholm stretches out from the central rotunda in a branching manner, each space primarily having only one connection to a more shallow part of the system, describing a well ordered, hierarchical and subdivided system, with clear distinctions and divisions. Following this subdivision is the classification of literature, as most clearly epitomized by the spatial structure of the City Library of Stockholm.268

In Malmö, on the other hand, the system more resembles a network, with several connections and routes between different spaces, and several possible relations between different kinds of literature. Still, the very basic subdivision into e.g. ‘children’s books’, ‘novels’ and ‘factual literature’ is strong, represented indirectly in a spatial distribution divided into the three volumes.269

So even if the configurative system (in the space syntax sense) of the City Library of Malmö is much closer to a network, the volumetric distribution of space still signals a division – in some ways even stronger than in the library of Stockholm.270

Still, the systems allow different degree of freedom in choice of routes, ease of exploration and possibilities of control. While the City Library of Malmö, in practice, have only one bottleneck – the entrance271 – the libraries of Växjö and Stockholm have several, where the perhaps most extreme tend to be City Library of Stockholm, where the entire main hall could be considered a

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267 A ‘tree’ in its proper sense have no rings, that is – from one space there is only one connection to the level of depth below and none to another space in the same depth.

268 The classification of literature is in all libraries following the system developed by SAB. SAB is a collaboration or union between the Swedish libraries, which in 1917 created a system for categorisation of literature, which has since been updated numerous times, latest in 1997 under the lead of Anders Noaksson. Noaksson, Anders (ed), *Klassifikationssystem för svenska bibliotek*, 1997.

269 The three volumes are not corresponding to these three categories, as will be shown in the coming. The point to be made here is that the division into volumes signals a division of that which lies within.

270 There are other factors to be considered in the case of Malmö that to some extent counter this ‘volumetric’ configuration, but as well the ‘conceptual’ system, as the relation between spatial system, volume and context and other such factors will be developed later on.

271 If we, for now, disregard the fact that the music and video room have only one entrance and one exit, this is rules placed on movement rather than configuration of space – though the effect could be said to be similar. This however, has not had any significant effect on the correlation between movement and integration in these two openings.
bottleneck. In other words, most spaces in Malmö are possible to reach in many ways, and there are many routes from one place to another. There are few spaces through which a visitor ‘must’ pass. The closest to ‘opposite’ is Stockholm, where a number of spaces are reachable only through one route,\textsuperscript{272} and several spaces work as bottlenecks, or points of control, for movement in the library.

Växjö, on the other hand, is a bit more complex. While there are two bottlenecks – the entrance and the connection between the two volumes – the ‘library proper’ (i.e. the part of the library housing literature (books)) has a stronger network tendency, with its possible circulation routes and several vertical connections, and the hall with newspapers, café and other has a very open structure, close to being one space all in all.

There is, however, in both Stockholm and Växjö, a tendency towards depth and single-route. The literature is pushed back deep in the system, and the systems have a high depth compared to the maximum possible depth of a system of that size. Somewhat ironically, the library with the least emphasis on circular forms, the City Library of Malmö, is the one in which the possibilities and diversity of circulation is the highest.

Stockholm and Växjö share another similarity in opposition to Malmö – the strong direction leading towards the ‘main hall’ of the library. They are both laid out in a way that promotes movement straight forward into the books (which, in both cases, happens to be a circular volume of considerable height, with several stories open and visible). Other activities are passed on the way, but a conscious choice has to be made in order to deviate from the route. The disposition of the libraries promotes a movement forward. In Malmö, on the other hand, the entrance leads straight into a space of strategic choice. Continuing straight forward would lead into the café (or out through the other entrance when it is open) and, to reach the library proper, the visitor is forced – or free – to early on make a choice of where to go.\textsuperscript{273}

Another aspect of the layout of Malmö – that is, in fact, a result of the above – is that as good as no movement within the library is directed towards the entrance. Movement inside constantly leads past, to other parts of the library, while especially Växjö, but also Stockholm, has a much stronger tendency of directing peoples movement inside the building towards the entrance.

The System as a Sign

Having made the initial observations of the libraries as distributions of space, it is time to turn to an analysis of the spatial systems as signs. How is this then done? What kind of meanings do the spatial systems, as signs, carry or convey? This is the perhaps most obvious, and indeed most often used, method of connecting spatial systems (of any kind, but also configurative) with meaning – as well the system as represented by a plan as the system as a ‘justified’ graph or other kinds of formalisations of space – and its relevance has been well

\textsuperscript{272} The maximum number of routes (in a basic scale) to any space (here, ‘space’ is used in the more traditional way, meaning a ‘room’ or a ‘hall’) in the library comes down to three, and that goes for only one of the spaces.

\textsuperscript{273} Such a ‘forced’ choice comes in both Stockholm and Växjö too, but at a significantly later point in the system, once already within the library proper.
established. It is thus possible to work under the premise, that as far as spatial systems are recognised in our minds, they are in part recognised as images, as ‘signs’ or more diffuse or abstract entities treatable as such, from which we produce meaning.

**The Other**

As stated earlier, the source of meaning of primary interest in this thesis is that which goes through social relations – relations of power and bonds and of self to self, self to others and self to the other. As for the spatial system, regarded as a sign based on the configurative distribution of space either ‘in itself’ or as perceived, it could as far as this thesis is concerned be assumed that this informs us primarily about ‘the other’, while relations to self-to-others primarily are developed through other means. The argument would be that the spatial system – in itself ‘the other’ – carries references and meanings that are connected to ‘others’.

‘the other’ as knowledge

For the purposes of this thesis, ‘the other’ in the case of libraries could, to a large degree, be regarded as either knowledge or literature. The distinction between them is perhaps not all to clear, but to a large degree the former is expressed or implied through the latter, as literature often is considered as ‘collected’ or ‘written down’ knowledge. The place of the novel is, however, slightly unclear in the former, while having a significant status in the latter, while the magazine (at least the factual kind) is part of the former but has an unclear status in the latter.

As presented earlier, though, approaching libraries as in society primarily expressing something about the idea of knowledge is natural, as the role of the libraries has been and still is to be manifestations of knowledge.

**The sign of the systems**

If we understand libraries as representations of knowledge, then their spatial structures can be interpreted as different expressions of the idea of knowledge. The spatial systems ‘in themselves’, then, primarily work as descriptions of the structure of this knowledge, and in an analysis of this structure taking the step via the ‘books’ risk clouding the more general question of the order of knowledge, as specific relations between different kinds of literature may start to interfere. It would, for example, be easy to early on slip into a discussion on

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274 As e.g the primary approach by Markus (1993).
275 This approach is to some degree used by for instance Kevin Lynch, and in more recent time Kim and Tversky. Lynch even use the word ‘imageability’ as a term for how easy it is to imagine a city as a kind of map (cognitive map) in our minds to use for orientation. Lynch, Kevin, *The Image of the City*, 1960, Kim, Young Ouk, *The Role of Spatial Configuration in Spatial Cognition*, Tversky, Barbara, *Embodied Spatial Cognition*, both from the 3rd International Space Syntax Symposium, 2001.

276 Above, On meaning.
277 First and foremost as defined by Hillier et al (see e.g Hillier, 1996), but also in a more general sense, which will be developed later.
279 Above, *Introducing the Libraries*
280 “Buildings as classifying devices, including the spatial layouts of modern museums, became the mapping of knowledge.” Huang, Hsu, *The Spatialization of Knowledge and Social Relationships – A study on the spatial types of the modern museum*, 3rd International Space Syntax Symposium, 2001, p. 6.
how the different spatial branches in Stockholm represent different branches of ‘knowledge’ (e.g. natural sciences, social sciences, history). This risking that one important fact might be lost; that the system of the city library of Stockholm, read as a sign or a symbol, symbolises knowledge as a tree-like structure independent of how the literature is arranged in it.281

Thus, if the spatial structure represents knowledge as a tree, or a network – or, for that matter, a single file or line (or a ‘series’)?282 – it would do so regardless of what kind of artefact is distributed in the system to symbolise this knowledge. The artefacts, the literature, are here best regarded together as one entity. In this sense, their function is to be a collective cultural artefact, which they in a way are, supporting or producing the idea of the library as a symbol of knowledge. Their role is thus not disregarded, but rather taken into consideration already when analysing the libraries as representations of the idea of knowledge, and the analysis of the internal relations between the different kinds of literature belongs to the analysis of distribution in space.

By now I would, supported by the argument above, argue that the spatial system to a greater degree provides information on the structure of knowledge than on literature, while the ‘order of literature’ is perhaps more represented in the distribution of literature in space. The reason for this argument being that, as concept, knowledge is freer from the ‘artefacts’ (books) than ‘literature’ and has a more general meaning, more to say about the world.283 The spatial (configurative) structure in itself can more easily represent such a concept, in which the symbol of knowledge – be it books or other artefacts284 – then can be distributed.285 In fact, it is not necessarily so that the spatial system has to be filled with any kind of artefact or symbols representing knowledge – as long as there is a social agreement that a building or a space is a space of knowledge, the system would start to

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281 This will be further elaborated later on, as it also requires some discussion on the other topics at hand – the distribution in and through space.

282 ‘Arrangement is defined by relationships of neighborhood between points and elements, which can be described formally as series, trees and networks.” Foucault, (In Leach, 1997).

283 The interpretation that in the given context provides the most meaning is the one taking primacy, the ‘more probable’ meaning and interpretation. Ricoeur (1982), pp. 165-181.

284 For instance archaeological findings in historical museums or models, skeletons or (though today perhaps less common) stuffed animals in natural museums. See Markus (1993).

285 “…we do not live in a sort of vacuum, within which individuals and things can be located, or that may take on so many different fleeting colours, but in a set of relationships that define positions which cannot be equated or in any way superimposed.” Foucault (in Leach, 1997).
work in this way. Be it so that this happens once a building is made into a library – the ‘library’ is still a symbol of the collected knowledge of mankind, close to being a metaphor for it.

Studying the systems a bit deeper, further observations can be made – one being the relative depth of the systems compared to their size. Notably, Stockholm, almost only half the size of Malmö, is almost as deep a system (with a maximum depth of 16 from the main entrance, see fig 5.1) as Malmö (with a maximum depth of 18 from the entrance) – a pattern that grows even more clear if the deepest relation (maximum depth found in the system between two convex spaces) is considered. This relative depth of the system, together with the tree-like structure, of Stockholm reasonably signifies knowledge as subdivided, where the different branches of knowledge are clearly defined and differentiated from each other and where each branch is of considerable depth, which is accessible only through one route. To understand something better means going deeper into that which one has already learned about it. It also tells of large distances between different fields of knowledge, where the differences grow more profound the deeper into a subject one reaches.

In such a system, it is implicated that each area of knowledge is its own, where learning from other areas is of little importance and indeed can contribute little to the understanding of the area at hand. The system of Malmö, on the other hand, can appear cluttered and close to incomprehensible, not really possible to weed out in an easily graspmable and structured manner – possibly emphasising the complexity of knowledge, but also its relative inaccessibility and the difficulty of grasping it.

The spatial configuration further reflects the ‘intimacy pattern’ of the given system. The emphasis on depth, particularly when combined with control, symbolise a need for separation between what is inside and what is outside, and the strong internal separation and ‘mean depth’ of the tree-structure suggest a need of separating what is inside from one another. A need that is also a representation, a representation of the structure of knowledge.

Together with other configurative properties, the spatial patterns thus imply different degrees of privacy – not only in the building itself but in what is in the building. The depth and separation of the spatial system of the City Library in Stockholm could be interpreted through the filter of what knowledge is and how it is developed or produced. The focus on privacy, secluded spaces and depth such as in Stockholm, in such a reading, implies knowledge as something in the individual, developed between the self and the artefact, through the individual’s study of its source, the books.

In contrast, Malmö and Växjö (Växjö: see fig 5.2), with high emphasis on either ringiness or network, and with a high, although differently accomplished, focus on spaces of communication or co-presence imply knowledge as much more social – as something that is developed through

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287 Measured in convex spaces of basic spatial scale.
288 The numbers above from the Convex Space Analysis performed on Basic Spatial Scale of the libraries.
289 Supporting this, in a survey made for the City Library of Malmö, one of the main problems pointed out by the visitors was the difficulty of finding what one searches for in the library.
communication between people. This to the extent that the actual artefacts risk becoming symbolic decoration, informing the visitor that the library is a place of knowledge, but not being the source of it.

These ‘images’ of the libraries are presented in order to describe the differences in view of knowledge that are represented. Saying that any of the two images is a true description of knowledge would – as most would agree – be too simplifying. Still, a general movement in view of knowledge from something developed through individual studies of the source to something developed through social interaction between people can be read in the development of the libraries as represented by these three buildings.

Of importance is that this representation is not simply an expression of how knowledge was perceived at the creation of the building – it reproduces that view as the libraries are used by the public. Stockholm does, and will as long as it is a library and is not rebuilt, represent knowledge as more being a product of one or a few persons, specialising and going deep into a distinct and discrete field of knowledge, while Malmö and Växjö represent knowledge as to a higher degree a product of social interaction, and this representation lies not only in formal expression but in the spatial configuration as well.

The system as ‘logic of the world’

Thus far, the discussion of the system has been focused on the system as a sign (that is, how the system (or the building) works as the signifiant of one or several signifiés), either in its physical form or as its mental representation in the form of cognitive maps. There is, however, another central issue to be dealt with regarding its role in meaning, which stems from the hermeneutics of Paul Ricoeur. If the building – as any work – and its parts is given meaning through the construction of a world in front of the work, and this world is built up around an order as interpreted from the work and its internal logic and structure, then the perceived spatial system (be it as a perceived whole or as a perceived logic of spatial arrangement) serves as part of this world – especially as a part of the

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291 The interplay between production of space, seen as how it is produced by values and ideals, and the production of space, seen as what it produces as a result of what it expresses, is perhaps best developed by Lefebvre (1991).

292 The emphasis on social interaction grows stronger consecutively with each library in chronological order, to the extent that compared to how people are using it actually becomes contradictory in Växjö – but this is something to which I will return.

293 The cognitive map should be considered a representation of the representation or perception of space in our minds, not as the object of study in itself. See below, The Distribution through Space.


295 Which could, to some degree, be compared to local and global integration in spatial systems, though this translation is only plausible if the intelligibility is high.
‘logic’ of the world. This would mean that apart from working as a sign, the perception of the spatial system and how it orders space, people and artefacts works on a deeper level in the production of meaning, through ordering other possible meanings for us, and informing us both of how they are connected, by what logic and through which principles. An underlying structuring order or configurative relations in this way serves to emphasise or deemphasize spaces, describe how they are connected, and serves as the internal (spatial) logic of this world.296

The difference between this structure and the ‘system as a sign’ as discussed above is not all too clear. The main difference, however, can reasonably be found in how they work in the production of meaning. The ‘structure’ or ‘logic’ of the world in front of the work has a more indirect and principal character than the more directly referred to sign. The way through which it is developed in our minds, however, is reasonably the same, and the same kinds of ‘distortion’ or simplifications of the system is reasonably found in this logic as in the cognitive maps, as will be developed below. On a behaviour or action basis, this logic presumably also has greater impact on how new parts of the system is met.

Analysing such an underlying structure is somewhat hard to do without discussing what it is that is arranged or structured, hence this discussion will be partly interwoven in the following discussion of distribution in space, and returned to in the concluding discussion. It is, however, possible to begin such an analysis when studying the configuration in itself – namely in how the logic, or structure, of social relations is presented by the system. Thus, by studying e.g. how the logic of the spatial system represents a logic in the social relations of power and bonds an understanding of how the spatial configuration presents a logic of the social structures can be developed. The logic of these relations mostly being close to, but not the same as, the idea of the social structure produced by the system as a sign. Part of this logic of the world is also the narrative of space – how space orders our experience and movement through the ‘story’ of the building, and thus how it presents the ‘plot’ of the building to us in a configuration of sequences and events. First, however, the system as representation of a logic in the relations of power and bonds will be studied in depth.

**Power and bonds**

There is, as can be gleaned from the discussion above, a form of social relations that can be traced in the spatial configuration – namely that of power and control versus bonds and freedom.297 Any spatial system allows for a certain degree of either control or freedom, be it ‘control for those in power’ or ‘social control’ from one to the other (a collective form of mutual social control),298 both in general terms – is the system hierarchical, are there many routes and so on – and in more specific terms – are there strategic locations of control, how many are they and how are they distributed? This suggest a structure of power and choice, both in the building in itself, in society as

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296 This supported also by the arguments of Ricoeur that when reading a text we from the beginning start to construct a comprehensible whole, a world, into which we try to order the parts, adjusting it as more information is gathered.


represented by the building and – in the case of libraries – in knowledge and knowledge-sharing.299

Control and controllability

The relations of power and bonds are present in different forms in a spatial configuration, both as representation of intent and producers of relations and meaning. They are, however, always present in one form or the other.300 For one, how distributed the system is,301 as another, the extent of control or control points, their distribution in the system and their impact on the overall possibilities of control, as a third, how the visual control is distributed throughout the system, and to what degree everything you do can be observed by others. Partly exercised by the way people and things are distributed in and through space; the basic scaffolding is readable in the distribution of space.

Spatial control

As a first observation all three libraries share one phenomenon – the reduction of entrances and exits, preferably to one, though in the case of Stockholm more or less two.302 Apart from that, however, there are remarkably large differences. While Stockholm continues a pattern of spatial control303 – there is an abundance of single choice routes and relatively many spaces from which control over parts of the system can be maintained – Malmö and Växjö show different degrees of permeability and ringiness. (See figs 5.1 and 5.2, as well as the VGA analysis’s of the libraries in the fact sheets)

Stockholm is a hierarchical system, a tree with branches of space reaching out in (comparatively) deep structures, where there are set relations of hierarchical order, where the relations between parts are strictly laid out in a certain way and where there is a high degree of spatial control of who moves where, who interacts with whom and what is related to what. At a first look, this system has an emphasis on discipline and power – there is a strong social control, and it is easy for anyone (e.g. the librarians) to have control over what happens. Exploratory behaviour is not promoted, neither is it presumed – you move into a branch because you know what is there and you wish to reach it.304 Further, once you have moved into a branch, you are forced to leave the same way, easily providing control over who and how many are in the different parts of the system.

299 “Spaces can be so linked that communication is free and frequent, making possible dense encounters between classes, groups and individuals. These are the basis for community, friendship and solidarity. The alternative is controlled movement, under surveillance, for narrowly defined purposes of production, or for only for such basic biological needs as eating, sanitation or escaping from the fire.” Markus (1993), p. 25 (See further Markus, 1993, p. 21-25).
300 Ibid., p. 23.
301 Hillier/Hanson (1984), pp. 147-155.
302 There are two public entrances into Stockholm, but they are effectively reduced to one leading into the main library (up the central stair) and one leading into the children’s section.
303 Spatial control is here used as a term of control of who passes by a space to other spaces in the system, as different from visual control, which will be explained later. Typically, in a true tree structure, the spatial control is extremely high – from each space there is control of every movement to or from a deeper space in the same branch.
304 One of the characteristics of people’s movement – be it based on configuration or not – is that people tend to avoid walking into ‘dead ends’ where they’ll have to backtrack to get somewhere else. Penn, Alan, Space Syntax and Spatial Cognition – Or, why the axial line? 31 International Space Syntax Symposium, 2001.
Växjö, on the other hand, has a to some extent more complicated system to interpret. There are both tree-like tendencies and open-plan solutions, interwoven and sometimes even disguised by the apparent circular form and superficial expression of freedom of movement. There are several places where secondary and tertiary routes are possible but not plausible, being either hidden or narrow paths, e.g. behind the cylinder containing the elevator. This is something that will be discussed in depth later. Suffice for now to say that the degree of spatial control in Växjö is problematic to analyse for several different reason, and that it signifies both spatial openness and spatial control, depending on how the system is studied. There is freedom of movement, but certain routes are strongly promoted compared to others, and these are also highly controllable.

Malmö, finally, has an emphasis on freedom of movement, where every space (principally, if not in fact) have more than one route to and from them, describing a more loose set of relations, less control and – at least as an expression – more freedom for each individual to construct the structures of relations between different parts. The degree of spatial control is low (once inside the entrance) and the general configuration is non-hierarchical and distributed. The system of Malmö speaks of freedom of choice and freedom from control, and as such, also tells of relations of bonds and friendship rather than of hierarchy and power.

If we, as an experiment, remove all connections that require the opening of a door, the differences grow even stronger, and the impression of Stockholm as a tree grows even clearer. This is then responded to by the spatial behaviour of those visiting the libraries, which I will return to later. Still, the placing of doors seems to emphasise the structural implications of the spatial systems, to the extent of e.g. in the City Library of Stockholm ‘hiding’ the possibility of taking the elevator to the second floor. The secondary connections are here visually hidden in one way or the other – behind doors, to the side (where the system implies they should not be) et cetera. This compared to Malmö and Växjö where they are, to different degrees, relatively easily seen. Thus, Malmö and Växjö thus far seem to express freedom of choice and freedom from control while Stockholm expresses the opposite.

Visual control

It is not so easy, though, as that a well integrated and open library is unproblematic from the point of view of control. Control is not only based on control of bodily encounters. To a large extent, control is performed through visibility

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505 This – regarding constraints and limits especially – effects is something which I will return to extensively in the distribution through space. For now, the point is that a system with a lot of rings and several routes between most systems signals choice and freedom. Foucault (2003a).


507 In all three libraries, the existence of a door – especially an opaque one, but actually any door that requires to be opened by the visitor him- or herself – seem to have an immense impact on how much the connection in question is used. This can be for several reasons – amongst which two are most plausible. Firstly, the doors are most often placed where the general principle of the system is diverted from – in Stockholm where the connections divert from the tree structure. Secondly, almost all of the connections are without doors, making the placing of a door somewhere so much stronger. Tentatively, these two factors work together – and, since the placing of a door seems to follow the first rule, they work both for planners/architects intentions and for visitors’ spatial behaviour.
– through the act of seeing or being seen. Such a pattern of ‘visual’ control does not necessarily conform to the pattern of ‘spatial’ control, and to some extent has other properties.

As a case in point, in the rotunda of Stockholm, there is the interesting and problematic mix of the spatially deep spaces of the balconies on the second and, especially, third floor which, at the same time, are under high visual control from the most integrated space, the main floor of the rotunda, making them both hard to reach and easy to survey.\(^{308}\) The ordering of the books further strengthens this pattern of control, turning the persons on the upper floors, who are often few, towards the books and thus away from those at the entrance floor, who are often many. Any behaviour, and any interest in the literature on these floors, hence, is under the surveillance of those on the ground floor, and thus the realm of possible action is restrained by a high degree of social control. The person there is placed on a scene for everyone to watch, while turning him or her away from the centre towards the books and thus removing his or her possibility of knowing by whom he or she is being watched.\(^{309}\)

Along similar lines of discussions of visual control, Bennett argues that the open-plan structures of modern museums has one primary purpose – that of disciplining the working class by putting them in the visual surveillance of the cultural elite and the bourgeoisie, constantly reminding them they are out of place and does not belong, transferring the behavioural patterns and values of those in power to those not.\(^{310}\)

At this stage of analysis, a similar pattern of importance of visual control as in Stockholm can be found in the City Library of Växjö, though here combining spatial openness in the whole library with a high degree of visual surveillance. Once inside the library proper, there are a few spaces from which a remarkably high degree of visual control can be maintained.\(^{311}\) Perhaps not of movement in the system as a whole, but for surveillance of movement related to moving between the larger entities – such as the floors or sections. This combination is further found in the spaces of movement, and the connections to the books, but not in the situations where the visitor actually comes in contact with the books.

The opposite could, to some degree, be found in Malmö, where, though visually comparatively open, almost any strategic location, save that of the entrance, does not give total control, neither visually nor spatially, over significant parts of the system.\(^{312}\) In the main hall, however, the pattern found

\(^{308}\) This, as a design decision, can very well be as a result of what kind of literature was intended to be placed there, what supposed social class its readers where of and the need to keep these under observation. “Surveillance could concentrate on the readers and the books they were using rather than on the stored items.” Markus (1993), p. 177.

\(^{309}\) Once again we encounter the problem with the space syntax tools of analysis in being purely two-dimensional. There is no doubt that the situation in the rotunda in the City Library of Stockholm is a result of the spatial system, and that this relation is of a configurative nature (based on the relations between spaces rather than other properties). The question could be raised whether the relations would be reciprocal (there are indications that they are not necessarily so), but as far as this thesis goes I will stop at pointing out this problem.


\(^{311}\) “The spatial function of museum that this method can observe is mostly focused on the ‘organised movement’ which is regarded as an important function of space to allow the ideology of dominant group to be manifested.” “The spatial function of the museum is mainly focused on the ‘reciprocal surveillance’ which is regarded as the effect of spatial form.” Huang (2001), p. 5.

\(^{312}\) See the VGA analyses of the different libraries, especially those of Control and Controllability, Above, The Space and Use of Three Public Library.
in the City Library of Växjö reappears – a visual openness and control combined, with the possibility of surveillance primarily centred on spaces of movement and communication – with the sole exception being the ‘shelf’, which still does not have the same strong expression of to be seen but not to see as the rotunda in Stockholm as it does not force people to turn their back to others when searching the books. The one place with similar tendencies – the upper floors of the atrium in the old library – interestingly contains the same basic kind of literature as the rotunda in Stockholm. There is, however, one significant difference – the atrium in Malmö also serves as the primary connection to other (deeper) spaces, while the balconies in the rotunda in Stockholm does not, which in Stockholm to a much higher degree emphasise the visual controllability of the behaviour of the person(s) being there.

Once again, this is a result of the spatial configuration ‘in itself’. The question is if anything can be put on the balconies of Stockholm without its status and the status of those interested in it becoming problematic. It is hard to imagine anything put there that does not turn either into something signalling high status and or low status when interested in it, although the tendency to turn the one observed away from those observing, combined with the spatial depth of the balconies suggest low status, as it places the person on the balcony under the surveillance of those on the main floor.\(^\text{313}\)

At any rate, this spatial and visual control combined with the configurative depth has one other effect – namely that of contributing to the role of the actual artefacts to work as symbols (of knowledge). Since there are very few who actually come in contact with these books, or any specific book or other artefact placed here, compared to the number that only get the general impression of a great amount of books (in many ways inseparable from one another and undistinguishable as individual objects at the distance), their primary function turns into working as a ‘field’, a ‘texture’, of the gathered knowledge and culture that is literature.

Thus Especially Stockholm, but to some degree also Växjö, describes a system where social control is fairly important, and where the entire system – though in different ways – expresses this, while Malmö tends to give a stronger emphasis on freedom.

Control and controlability, as a configurative property, however, is not to be directly translated to power or surveillance as suggested in the reference to Bennett. It does also (at least in the case of visual control) provide a sense or a possibility of co-presence, the fundamental requirement for social interaction and the forming of social relations.\(^\text{314}\) Furthermore, the properties making the high degree of control possible in the rotunda of Stockholm also contribute to make the system more visually shallow, visually connecting – and to some extent making people co-present in – the deepest spaces with the most integrated one into one ‘metaspase’, at least theoretically enabling a sense of community and participation even when being in the configuratively deepest parts of the system.

Thus the results of the visual control are double – both providing social control and providing possibilities for interaction, encounters and co-

\(^{313}\) Notably, in all libraries, the books placed in such situations tend to be what could be considered either to belong to categories that are seldom loaned (elder literature, literature in foreign languages etcetera), or that are of such a category that they, from a traditionalist point of view ‘should not be encouraged to loan’ (Fantasy, Science Fiction etcetera).

presence, and the possibility of integrating different groups of people through promoting if not more at least visual contact over social borders. Which of these tendencies takes precedence in a spatial system is difficult to deduce from the system in itself. Reasonably it varies over time and culture depending on e.g. to what degree the system is dominated by one group or ‘class’ and to what degree one class or group is deciding the norms or ideals for the whole of the society in which it exists. In any case, the spatial system promotes both of these effects, and at least one of them occurring is to be expected, though reasonably both, but to different degrees for different persons. This, however, can be clarified through the means of analysis of distribution in and through space.

**Space as the narrative**

The narrative stands, in large, for the construction of plot or meaningful sequence in the telling of a story. The narrative serves to move the plot onwards, as well as to from a discrete set of events construct a meaningful whole. The order in which events are presented, and the way in which they relate to each other, the plot is developed, understood and explained. Tentatively, as space sets the limits of how we can move around and in what order we can visit different spaces, space, or more precisely, spatial configuration, in a sense, serves as a part of such a narrative of architecture.

Once again we can return to the historical museum. The sequencing of spaces into a series constructs a chronological narrative of history, linking it into a story of events or eras following each other. In such a case, space as part of the narrative of the museum can hardly be questioned. Through the ordering of space the chronological nature and order of history is disclosed to the visitor into a well structured story that is possible to follow from start to end – in many ways similar to a fairytale.

The idea of a story or a plot as a chronological structure should not, however, be overestimated. The idea of a chronology of the narrated should not be mixed up with a chronology in the narration. The order in which sequences are presented can follow a chronological timeline, but can also follow other patterns (as e.g. in many fictional works) – the ability to out of such sequences build a meaningful totality out of the scattered events is based on a configurative ability. As Ricoeur describes it: "The art of narration, as well as the corresponding art of following a story, therefore require that we are able to extract a configuration from a succession." Thus the story (or plot) in narration is a result both of sequence and configuration, and where they simultaneously work in order to build up a comprehensive whole and a story. Ricoeur further emphasises the role of configuration in the narrative, especially in the case of history, where he claims the narrative to be heavily reliant on configuration rather than succession.

Thus, space can be said to conduct a narrative function in two ways – the first in how its configuration serves to support the construction of – or even is – the narrative of the building, the second in how it through setting restrictions on movement and the orders in which space can be experienced, sequences the movement or experience in space into spaces, which to some degree are translatable to ‘scenes’ or ‘events’ in the narrative of the building.

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316 Copley, Paul, Narrative, 2001, pp. 4-12.
Further, it suggests that not independent from, but in a free relation to, the sequence in which spaces are visited or experienced is only part of creating the narrative of the building, since the configuration – be it a plot or a spatial system – help the reader understand how the parts are linked together forming a meaningful totality, no matter in what sequence they are presented.

A case in point of the configurative structure of the narrative would be the film *Mulholland Drive* by David Lynch. The film is presented – as any film – in a sequence of scenes following one after the other. In the beginning, the scenes seem to be following what appears to be a chronological order. This, however, after a while is put in question, and other possible chronologies are presented, other possible timelines and other possible sequences of events. In a way, what this film does, is to present a story in a non-chronological order, where the configurative relations of events is a key to construct the meaningful whole – where the process of identifying which part relates to which parts are directly set in motion and where the understanding of the configurative structure of the story is the key to understanding the plot in itself.

Thus, even though sequence is an important part in the narrative, there is a difference between sequence in plot and sequence in narration. Even though both serve to disclose and create the story, they should not be mixed up. In the long run, the seriality of the historical museum taken as an example, would over time construct a seriality in the narrated, in history, even if the spaces at first where not experienced in the proposed order.

*Is space narrative?*

Is space, then, a story? Does it have a narrative? What can first be said, is that this question is more easily answered for buildings than space in general. A building suggests that what is inside is related to each other somehow, that there is a ‘plot’ – a reason to bring it all together, which can be discovered, and a story to be told both of the building and in the building. Even though, as Cobley discusses, this is *not necessary* for the development of a narrative, it supports and strengthens it. 319 Another support for narrative of space is the idea of movement and plot in a story. For there to be a plot, or a story there must be a beginning and an end, between which the story and plot unfolds. The role of the narrative, in a way, is to keep these apart and provide the reading between them.

Here, there are basic similarities to be found between *narrative* in a story and movement – namely a reason for it, a starting point, a move through that which takes the one moving towards the end, and an ending. This is not to be misunderstood as that all movement has a pre-defined, specific goal – that is simply not true. Two things that movement share with a story, however, is that to be performed, there has to (at least to some extent) be an *idea of an ending* – that there is a goal or ending that is meaningful 320 – and that having to trace back in order to advance is shunned. 321

319 Cobley (2001).
320 Recent studies by Stähle show that though specific attractors are not necessarily producing movement, the existence or attractors is vital – there has to be a *potential outcome, a potential meaningful endpoint to the movement for it to be performed. It is important to point out, that this does not go against space-syntax theory, it simply claims that for configuration to have impact, potential endpoints of movement has to be available in the system.
321 Just as reading the same paragraphs again to advance a story is bothersome, people avoid going into spaces that are dead-ends, as shown by Penn (2001).
Here it would also be possible to discuss freedom in the construction of the narrative. A series of spaces, where one is lead into one end and with the exit in the other end, is a controlled narrative, where everyone is guided to ‘read’ space in a specific order. Comparatively, a network of spaces form a much freer narrative, where the ‘reader’ are left more to him or herself to produce the sequencing and to push the plot ‘onward’, much in the same way as a hypertext novel.322

This, again, however, should not be mistaken for total freedom in constructing the plot. The configuration of the hypertext – which sections are reachable from which, which episodes are linked to each other and which episodes or sections tend to reappear often in the progress of reading – is not without the constraints put on it by the chosen structure of texts and links. In a way, hypertext is a configurative narration of a story. Just as the sequence in which spaces are possible to visit, or explore, might very well be more or less free but still unavoidably ordered in a configuration deciding what routes are possible and which spaces are linked to which, so is the hypertext novel, as both define a set of possible links through which any movement must progress.

As an example, in Stockholm, the ‘story’ of any visit to the library proper begins, once inside the building, with the transgression of the long stair – comparatively dark – leading upwards, towards the light, reaching into the central rotunda filled with light and books, from which a choice can be made to move into any of the subsections of the ‘story’. This part of building a meaningful totality of a visit to the library is (except if you chose not to visit the library proper) one that cannot be avoided, and is one narrative of such a visit – a narrative that, to a large degree, is social space. Further, in such a visit, the central rotunda would be a recurring scene in which the story takes place, and the scene through which parts are linked together, should different branches be visited. It would also be the place in which the choice of different ‘plotlines’ would be physically embodied.

What it further suggests, is that how controlled movement is, the degree of choice in the spatial system, to some extent sets limits on possible interpretations of the same system. A series has a set configuration of how events or spaces are linked; setting constraints on the narrative, while a network has a freer configuration, where it is more up to the visitor to construct the story from the perceived structure. As stated before, this is not to say that one is better than the other, but rather to say that if one wants one of these narrative effects, it leads to constraints on what spatial arrangements are available to produce it. Through reading the configurative structure of a building, the range of possible narratives is narrowed as well as made clearer.

The narrative of space, further, reasonably is part of producing the cognitive space, as will be further discussed in the following. The discussion on spaces for privacy, interaction, movement or being, importance, status and purpose also are supported and support a narrative portion of spatial configuration – as it is through the ‘story’ leading up to many of the spaces – or their position in the ‘plot’ as a whole they are given their social meaning.323

322 Colley (2001).
323 It should be noted, however, that the narrative of space not necessarily need to be tied to an experiencing subject but is to be found in the configuration of space itself – and can also be e.g. a collective narrative of all people in an urban system. Johansson (2003).
This does not mean that the sequence or order in which artefacts, events or aesthetic expressions are ordered in space are not important for the narrative of the building – on the contrary, their position in space grow even more important, as they participate in constructing the sequencing of events that, together with the configuration, serves to produce a meaningful whole, serves to produce a narrative of the building.

The system in its context

Before moving on, it would be of worth to study what can be learned from the configurative system as seen in relation to the conceptual or volumetric spatial system and how these interact with the context to further emphasise, de-emphasise or present new or altered meanings in the libraries. To some extent this, by necessity, will include taking formal factors or materials in consideration – but only as far as they are strengthening or contrasting what is ‘said’ by the spatial system.

Of the three libraries, the City Library of Växjö most of all symbolises ‘literature’ or ‘knowledge’ as one, unitary, whereas the City Library of Stockholm and especially the City Library of Malmö with their volumetric and spatial composition signals some kind of division. This, however, presupposes the knowledge that all literature in Växjö is concentrated in the cylinder, and thus is not readable directly in the spatial system in itself.

The centric nature of Stockholm and Växjö implies knowledge as an entity, with one common centre or focal point, no matter how subdivided. Both their spatial systems and formal expression, as well as their tendency to be enclosed, speak of knowledge as one. The expression of Växjö even has a tendency to describe this entity as finite, possible to keep within the enclosed space of a cylinder, while for instance Malmö describes a more open-ended view of knowledge, directed outwards. For instance, the main hall in the latter with its strong emphasis on the visual connection to the outside, further emphasised by spatial system, signals a reaching out from the library into the world outside.

As systems in themselves, Stockholm and Växjö has in different ways rigid structures – Stockholm as a tree and Växjö with an enclosed ring in the outer rim of the system. The spatial systems and the formal expression serve to emphasise certain characteristics in one another. While Stockholm as a system may grow, it does in its configuration imply that such a growth would follow the same pattern as its current system in a (fairly) uniform manner – either increasing the depth of the branches (preferably symmetrically) or adding branches. This, together with the volumetric composition and conceptual spatial system makes it extremely difficult to add to the City library of Stockholm, unless it is solved within the physical confines of the building of today.

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324 This is further emphasised by the distribution of the literature in itself, but this is something to which I will return. For now, suffice to say that the division of volume or space is responded to by a basic subdivision of literature.

325 This becomes apparent upon the first visit, however, and hence early becomes part of the perception of the library.

326 For further discussion on centric spaces and their symbolising of universal knowledge, see Markus (1993), p. 171-185.

327 See the justified graph of the system seen from the entrance – there are extremely few connections that do not lead to a ring. As compared to Malmö there is a strong tendency towards rings instead of networks (above, Space and Use in Three Public Libraries).
The City Library of Malmö, on the other hand, has a strong tendency to divide knowledge in two distinct entities, with a wide gap which must be bridged in order to move between them. Still, it avoids the rigidity, finality and enclosed tendencies of the other libraries. One can raise the question if this had been possible to achieve in Växjö too, using basically the same formal expression, but was avoided by the decision to enclose all books in one of the volumes (the deepest and most centric one, at that) — something that will be further developed in the discussion of distribution in space.

The spatial system as perceived

There is one problem, however, with the discussion above as far as meaning is concerned — namely that it to some extent presupposes that the ‘actual’ or ‘physical’ system of space is also the perceived or lived system of social space, that it assumes that the system as it is in ‘physical reality’ also is what is conveyed to our minds. This would, without much doubt, be a valid approach for understanding the intents or values of either the architect or the commissioner of a building, but — in the same way as the text gets its own life once put on paper — is not necessarily what is perceived by the ‘reader’ or ‘user’ of the building or city. The intent of this thesis is to discuss what meaning is produced by and in the building once it is built, that is, meaning as produced from the use and perception of the building regardless of whether this is intended or not. This would mean that a further understanding of the link between ‘perceived’ space and ‘actual’ space is necessary. This, however, is something that will be returned to later, in the discussion on distribution through space.

In any case, the spatial configuration ‘in itself’ informs us of power, status and relations of spaces, people, things and other phenomena. It does so both through the perception of the underlying logic and through the way which it represents knowledge or society as a sign. These spatial systems, and their following implications, references and meanings, are then, I propose, one signifié of the library in question — be it when spoken or written about, thought upon or otherwise perceived or conceived.

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328 This will be further discussed below, as it is a to some degree too simplistic interpretation of the spatial distribution of the City Library in Malmö.
329 See Ricoeur (1982) or above, Hermeneutics.
330 Whether there is such a distinction, and whether the ‘perceived’ space is not the ‘actual’ space, as different from e.g. ‘physical’, ‘Euclidian’ or ‘configurative’ space is a discussion that will not be treated here, as the distinction is used in order to describe the argument, not as a definition of how space works.
5.3 Distribution in space

One could raise the question to what degree the meaning of artefacts or spaces, as produced from the distribution in space, is susceptible to influence from values and meanings assigned to the artefacts or objects in themselves, and thus to what degree their meaning in space is a result of cultural codification of the artefacts in themselves and to what degree their meanings is a result of their spatial location. As a response to this question, it must first be said that what is dealt with here is not the meaning of ‘a’ artefact, or necessarily ‘a’ space, but what systems of space and artefacts located in these – taking their inscribed meaning into consideration – mean, and how this, as a consequence, affects the meaning of the space, artefact or artefacts. How and after what order we choose to locate our things in space assign status, meaning and importance to both the artefact and the space in which they are placed mutually, both telling of the intended use of the space and the artefact and informing us about who or what it should be used in connection to or separated from. The question, thus, is not primarily the meaning of individual objects or spaces in themselves, but the meaning(s) produced by and from them as a result of their (internal and external) spatial relations. Neither is the question primarily about what the artefact or artefacts location within a space is saying, but their location in space as relating to the spatial (configurative) system as a whole.

It must also be said, that while distribution (or location) of things possibly can support many different meanings or interpretations depending on the artefacts initial status or otherwise ascribed meaning, the set of possible interpretations is not completely arbitrary – or as Foucault puts it: “[…] we do not live in a sort of vacuum, within which individuals and things can be located, or that may take on so many different fleeting colours, but in a set of relationships that define positions which cannot be equated or in any way superimposed.”

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331 Which is connected to the supposed or socially established primary use codified into the artefact, as described by Eco (in Leach, 1997) as well as to the symbolic meaning of the artefact through cultural or social references.


333 It must be said, however, that the locations within ‘a’ space will be discussed to some degree, though this has to do with how space is defined. In these cases what we are dealing with is when the artefacts (as Lefebvre would put it) produce a social space which then exists ‘within’ another space. There will also be discussions where spaces of one scale are (as they to some extent must be) located within spaces of another scale and this relation is scrutinized.

334 Foucault (2003a).
Furthermore, different interpretations would, as a result of these relations, be more or less coherent with the overall structure, or the logic of the presented world, while others would not be able to fit at all, and hence would be rare or disappear — or assign new meanings to the space or artefact through the production of a metaphor.\(^\text{335}\)

Thus, when considering the meaning of a spatial system, what is distributed in it and how this is distributed, affects the meaning of the said system, as well as the meaning of the objects or functions distributed are affected by their location in the spatial system.

To refine the discussion, however, one thing must be made clear. When discussing the distribution in space, what will be discussed is not how anything is distributed (or distributes itself) in space, but that which is by a more or less conscious act located in space – by someone or something else than the object (or person) itself. Unplanned events like encounters could, naturally, be said to be distributed in space, but the ‘unplanned’ is considered as a result of the distribution through space, as developed below. Typically, artefacts, such as books, art, furniture, utilities and so on, but also less material ‘others’ as functions or programmes, such as cafés, toilets, sitting groups, studying places, bookcases (though these to some extent partake as distributors of space, see above, spatial scales) are distributed in space. Thus the placement of personnel or information desks, and the location of sitting groups are up for discussion, while the emerging (spontaneous) locations of interaction are not. The discussion on distribution in space thus is not on the distribution of anything in space but of that which is located in space by someone as the result of some kind of conscious act. Further, the question is what the consciously distributed artefacts, persons and functions are telling the visitors, what meaning is produced through their location in space and their relative position to others and the other.\(^\text{336}\)

As method, the discussion will primarily be performed as a kind of ‘archaeology’, an investigation into how functions or things are related and what convergent or divergent formations or rules these distributions follow. The intention is not to restore what was thought upon ‘creation’ of the situation, but what the artefacts or function perform in the context in which they are situated, and then not each individual artefact or function but what could be called ‘types’ of artefacts or functions – such as ‘places for study’ or ‘terminal places’. What is attempted is to restate that which the artefacts or functions already say. In a way, archaeology is “[…] nothing more than a rewriting: that is, in the preserved form of exteriority, a regulated transformation of what has already been written.”\(^\text{337}\)

What is to be performed is a set of studies, interpretations and conclusions derived from the empirical material, used to present a ‘picture’ or a ‘story’ of how the distribution in space affects meaning rather than to give a long, coherent discussion based on a thesis leading from point A to point B.

\(^{335}\) A metaphor is, in most cases, produced by the use of a word in a context where its lexical meaning is so unlikely, that instead another meaning is produced loosely based on its lexical origins. Ricoeur, *The Rule of Metaphor*, 2003.

\(^{336}\) As Thomas Markus describes it; “The monastic community had its formal structure. Inside the monastery church the rules of its members was signified by spatial location and by differences in the amount of space allocated, in the elaboration of furnishings, in seeing and being seen by others, and in entrances and circulation routes.” Markus (1993), p. 23.

This said, the question can be raised what this which is distributed in space is. As far as this investigation reaches there are some critical distributions to be considered. Since the question is the idea of knowledge in public libraries, they are all, to a more or less obvious extent, connected to questions of that

*programme* and *function* as discussed above.\(^{338}\) The first, and perhaps most obvious one, would be the *artefacts* housed in the library – books, magazines, journals, newspapers, maps and so on, both their internal relations and their relation to the system and building as a whole. Secondly, spaces – or perhaps places – assigned for the *interaction* with these – such as reading places, work tables and sitting-groups.\(^ {339}\) These are reasonably divided into their different intended uses – e.g. studying benches and sitting groups – depending on if they are primarily for *focused reading* or *studying* (for the individual) or if they are for *casual* or *social* reading.\(^ {340}\) Finally, it is worth looking at where places such as cafés, information desks, book return desks and other functions are located.

These distributions, then, are interesting to study both for the evolving patterns of ‘internal’ relations appearing within each category, as their location in the spatial system in itself and their location compared to other functions, programmes or artefacts, and not the least their position compared to communication routes and the spatial properties of these. Further, it could be assumed that that which is distributed in space serves to produce meaning in two different ways – through *symbolising* or *representing* something (being a sign) and through how they are *used* and in the way in which they through use *codify* space or produce *performative* meaning.

The distribution in space also serves to produce a *meta-story*, a tale of how the order of space represents another order or structure. The in the nineteenth century emerging historical museums with their *series* of spaces where further codified with meaning by the distribution of historical artefacts being placed in a chronological order, with *epochs* being represented by spaces, visually and spatially representing the meta-story of the continuous, chronological and episodic character of history that was the proposed view of history which they were to represent.\(^ {341}\) These series of spaces would, as stated above in any case represent something as *serial*,\(^ {342}\) but the choice of distributing the artefacts in the way it was done describes this series as *chronological* and also serve to define what different episodes or epochs there are, how they are defined and differentiated from each other\(^ {343}\) and in what order they are related to each other. Thus, many of these museums had – and still have – a set route, where history is to be read from the ‘beginning’ to the ‘end’, which promotes the idea of *time* as a *linear* phenomenon as the basis of which to understand history.\(^ {344}\)\(^ {345}\)

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\(^{338}\) Above, *Introduction to the libraries* or Gran (2002).

\(^{339}\) These would in many cases be considered as social spaces, or producers of space following the reasoning of Lefebvre. As far as this thesis is concerned, however, they are not treated as spaces in themselves. Above, *Social Space and Social Relations*.

\(^{340}\) ‘Social’ reading meaning social interaction ‘through’ literature of different kinds, as in discussing specific books, writers, works or parts thereof or discussing literature at large.

\(^{341}\) Huang (2001).

\(^{342}\) Foucault (in Leach, 1997).

\(^{343}\) See e.g Peponis’ and Hedin’s in their study of two natural museums show how this is taken to the extreme as the specific locations of specific specimens lead to an internal conflict, and personnel of different factions moved them during the right to fit ‘their’ view of the evolution. Peponis, John/ Hedin, Jenny, *The Layout of Theories in the Natural History Museum* (1993).

\(^{344}\) Markus (1993).

\(^{345}\) See above, *Space as the Narrative.*
The structure of knowledge

The perhaps most obvious and natural end to begin such an exploration would be to investigate how the sorting, classifying, grouping and relations produced by the distribution of the primary artefacts of the library – the books – represent the field of knowledge and its structure. As anyone who own or has owned more than a few dozen books know, as the amount grows, so does the need to invent or implement principles and categorisations of how these books are to be sorted, in order to be able to find one’s way among them. These classifications, or groupings, are based on some kind of logic or principle, of which books are related to which books, and how they relate to other classes or groups, so that, in order to find a book, one does not necessarily have to remember its exact position, form or colour but can instead start the search after theme or class. This sorting, though perhaps somewhat unreflected (or precisely because it is somewhat unreflected), is based on a view of a structure of the world or the literature, and an interpretation of which relations take primacy over which (e.g. it author, theme, ‘kind’, title, genre et cetera that is the primary criteria for the location of a book). This sorting is, at its heart, configurative.

The same kind of notion of structure and relations can be studied in the libraries and the distribution of literature within these. As the spatial sorting of books in a bookcase conveys an idea of how these books and what they contain are related, the placement of the artefacts in a library does so in an even more complex and determining manner. Though in Sweden usually based on the classification system developed by SAB (Sveriges Allmänna Biblioteksförening), there are choices and classifications above or outside of this system that can be read in the distribution of literature in the three libraries.

Before moving on it must be emphasised that the distribution of books in all libraries take on a heavily spatial character. Space is one of the main principles of sorting (the space in the bookcases included) and when the space created by the building does not provide sufficient support, the bookcases in themselves tend to take on a distinctly spatial distribution and through their arrangement in space signal classes, themes or subjects (see figure 5.3). This is perhaps neither surprising nor questionable – to a high extent the task of the library is to order and distribute literature in space in order for people to be able to orientate themselves and find what they are searching for. The spatiality of distribution reaches further, however. In both of the open-

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Figure 5.3 – Placing of shelves in the third floor of the Calendar of Light, the City Library of Malmö. Notice how the bookcases, even though they do not follow the walls or other parts of the building, form distinct spatial entities – both in themselves (‘blocks’) and between them (‘squares’).

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346 This is a very common example of the need classification and sorting, which sometimes goes further into discussing what kind of classifications work for different amounts of books. Typically, size and colour are said to be possible only while the collection of books is relatively small, and then the classification slowly moves towards other factors – typically what the books are about.

347 Noaksson (1997).

348 Gronli, Anne, Opplysningsstidens bibliotek: (in Gran, 2002).
plan libraries the distribution of books is performed as structures of squares of bookcases, ‘blocks’, separated by communication routes and open (empty) areas, ‘streets’ and ‘squares’. The point to be made here, however, is that these ‘blocks’ are then thematically strict – a theme, as a general rule, is not allowed to spill over into other blocks, and is – if small – assigned a part of it that is spatially logical.

Emerging from the spatial distribution there are a few, basic kinds of knowledge that is prominent and separated from one another in all three libraries. Firstly, there is a separation between factual books and fiction, where lyrics tend to belong to the latter. Secondly, it appears in the category of factual books a set of three to four primary categories. The most distinctly found and separated is that which has to do with cultural activities, or meaning. Literature on language, art, music, literature and so on is grouped together, apart from other factual books. Thirdly, there is a division between what could be defined as ‘knowledge based on facts that are stable’ and ‘knowledge based on facts that are in constant change.’ The former, knowledge based on facts that are stable, consisting of primarily natural sciences and technology and the latter, knowledge based on facts that change, primarily by economy, political science and jurisprudence. An interesting observation is that the position of history has a somewhat floating character in this division, in Stockholm definitely tied to the former of the two, and in Malmö and Växjö with a much closer connection to the latter kind (fig 5.4 and 5.5).

This, at first, in many ways seems like a logical order in which to classify literature. It is, however, not without its accompanying problems and difficulties. The conceptual division between for instance fiction and non-fiction– emphasized by the spatial division between the two – is not always self-evident as the most useful. The question can be raised why a factual book

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The terms blocks and squares are actually used by librarians in Malmö, both as a means of describing where to find things, but also as a means of sorting and distributing books in some kind of thematic structure, where each block serves to contain an overall theme to which the literature on the individual shelves adhere. The same structure, though perhaps not as explicitly, can be found in Växjö.

There are exceptions from this, but these are very rare and to mostly in cases where the sub-groupings are so small that it for practical reasons does not make sense to give them the amount of space that, would the shelves and their spaces rule sovereign, they would get.

In both Stockholm and Malmö, this division is stronger than the following categorisations, represented in Malmö by the separation into two different buildings – where the literature on art and literature is located close to their ‘expressed form’, music, fiction and so on – and in Stockholm by the fact that between the other two categories, there is a secondary link which enables passing between the two without going through the rotunda.

As derived from the distribution of literature in the different libraries.
on life in Belize has a closer relation to a factual book on northern Alaskan bugs than with e.g. novels taking place in and giving a critical illustration of life in Belize. The methods of distributing books, and especially the traditional sorting in itself, is not the point, however. The point here is that through the spatial distribution we are informed that, indeed, the relation between the two factual books is more important and substantial than the relation between the novel and the factual book. As read from the chronology of the building of the libraries, the distinction between natural science and technology on the one hand and social sciences and history has also grown more important, and the latter is more closely linked to political sciences and its relatives.\footnote{This chronology also describe a change in view of what “history” is from the study of facts to an understanding of a constantly changing and evolving material, influenced by interpretations and models of understanding affecting what the material has to say.}

As another example, more within the traditional distinctions, one could also ask why, when such a section – outside of the traditional sorting – is created in Malmö, books on environment and ecology are located deep in the section of biology and natural sciences (though not technology), and not for instance closer related to technology, or for that matter society or economy, as much of the questions dealt with within such literature has to do with how we live our lives and how we, perhaps, have to change our society to reach a sustainable situation in the future.\footnote{It is important to note, once again, that this is not about right or wrong. There are a number of valid reasons to emphasize the relation between environment, ecology and biology. The point is that through the spatial location, it is this relation that is the one chosen to be presented as the most important instead of other – from certain points of view as valid – relations. One could also raise the question why this category is given such a deep and, from the point of view of assigning status, unimportant location in the library, as it is by many considered one of the most important questions of today.}

As a result, the spatial distribution of books conveys both a view of how knowledge and literature – and in the extension the world – is built up, how parts of it are related and how we are supposed to relate to it.\footnote{See Markus (1993).} This sorting, in many ways following the western traditional view on knowledge, undoubtedly help in reproducing these categorisations, both consciously and subconsciously for both visitors and librarians, at the same time as they, being fairly consistent in all three libraries (and in most public libraries in Sweden), help people find what they search for. However, even if the categorisation seems logical and even natural, one could wonder what relations and/or knowledge is lost or hidden.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{distribution.png}
\caption{The distribution of literature in floor 2 and 3 of the new building, the City Library of Malmö; a) Humanities, Social Sciences, History, b) Economy, Jurisprudence, c) Technology, d) Natural Sciences, Ecology, e) Magazines and Reference. Notice how firstly, History has moved together with Social Sciences and Humanities, secondly how they in turn have been separated from the natural sciences and technology and instead been linked to jurisprudence and economy.}
\end{figure}
due to the way the structure of knowledge is represented, how visitors used to a totally different categorisation would interpret the sorting, or if he or she would be able to make sense of it at all. As a side note, the one library experimenting most with other kinds of categorisations, the City Library of Malmö, has been criticized for being hard to find what one searches for in.

Apart from the above categorisation, there are further categorisations made following other kinds of logic. These categories are, however, mostly smaller and in different ways to a lesser degree ‘the primary objects’ of the library. Children’s books, newspapers, music media (CD’s, LP’s, tapes), films and talking books are returning categories in all three libraries, and though most often motivated by practical reasons, (parents need to be able to keep an eye on their children, and children have a tendency to make much noise) this is not unproblematic either. This, however, is something that will be elaborated further upon in the coming.

The primacy of facts

Another tendency emerging in the distribution of literature in all three libraries is the tendency to give emphasis to the library as housing knowledge rather than literature for entertainment or leisure. To begin with, visitors are in all libraries in different ways promoted to visit the sections of factual literature, and the said is in different ways defined as most important. Perhaps most obviously in Malmö – where the most accessible floors of the atrium in the old building are assigned to factual literature on arts and music, and where the entire ‘Calendar of Light’ – the new, prestigious building with its great hall – is devoted to science, sociology, history and other factual literature. In Växjö, the same situation emerges, with the movement being steered forward and upwards, to the light, in which the factual literature is situated. On the lower floors is literature of lesser importance – children’s books, novels, talking books and so

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556 As extensively discussed by Foucault (2003a, 2003b).
557 For such a completely different categorisation, Foucault gives the example (from the works of Borges) of a categorisation of animals in ‘a certain Chinese encyclopaedia’, stating that ‘animals are divided into: (a) belonging to the Emperor, (b) embalmed, (c) tame, (d) sucking pigs, (e) sires, (f) fabulous, (g) stray dogs, (b) included in the present categorisation, (j) frenzied, (j) innumerable, (k) drawn with a very fine camelhair brush, (l) et cetera, (m) having just broken the water pitcher, (n) that from a long way off look like flies.” Foucault (2003a), p. xvi.
558 These ‘new’ categorizations are, though, not replacing any old ones, but added to the existing, and often books are placed in both sections if they belong to two.
559 See below.
560 As an important note from the coming discussion, the latter three can not be treated simply as ‘other media’, as there is a very strong spatial separation between the same media as represented by talking books on the one hand and music cassettes, CD’s and LP’s on the other in all three libraries.
561 Given these categorisations, and compared to the at first amusing categorization of the Chinese encyclopaedia above, one could a bit crudely describe ‘western categorisation of knowledge’ as described in Malmö as being of: ‘society and history’, ‘nature and technology’, ‘politics, economy and jurisprudence’, ‘communication and creative arts’, ‘fiction’, ‘older fiction’, ‘for children’, ‘for people with for some reason difficulties to read’, ‘easy or shallow reading’, ‘music and other entertainment’, ‘news’, ‘popular’ and even ‘about the local area or produced by people from it’. In the coming, however, it will be shown and discussed how the latter part of the representation both is based on and implies other things than a structure of knowledge, and hence, it would be reasonable to assume that the structure of knowledge, as represented in the libraries, primarily is a product of the structure of the main body of literature – as represented by the first four or five categories.
on – and entertainment is even in another building, outside of the ‘library proper’.

The situation in Stockholm is a bit more complex, but the same tendencies can be seen. Even if the central hall – the rotunda – is filled with three stories of fiction, these are (as noted earlier) spatially deep, and with their location and the form of the balconies leading to them, they serve more as a backdrop – a symbol of literacy – than as something that is actually supposed to be read.\textsuperscript{362} The furniture further underline this arrangement – purposefully emphasising the straight lines leading between the halls containing the factual literature, and with as good as all reading places in those halls. This is another arrangement reoccurring in all libraries – there are few or no reading places by the novels, which you are supposed to fetch and go home, read somewhere else, in privacy. Not something you do in a library.

One could further argue that a line or a tree – as noted earlier emphasising depth and the need of depth – as such also gives status to that which is deep. The need for depth implies the value of that which lies deep, or in rare cases that which is shallow,\textsuperscript{363} while a network, emphasising the connections between the different parts as the valuable, would imply the value being in that which lies easily accessible within the network, and thus configuratively shallow.\textsuperscript{364} Following this pattern is also the distribution of literature. In a hierarchical, serial system, the most valuable is placed in depth and high up, signalling status and importance,\textsuperscript{365} in the network system of Malmö, emphasising the importance of connections and communication between the parts, that which is accessible implies importance. Both configuratively and in expression, facts and philosophy are promoted over fiction and ‘storytelling’.

Thus, the three public libraries are all places of study and learning of facts rather than places to spend your spare time – providing factual literature is not what you wish to read on your spare time. Naturally, this can be connected to an idea of public libraries as ‘for the people to be educated’, and the primacy of facts does not necessarily imply that fiction is either bad or uncultivated. It does, however, codify the concept of library with activities of knowledge, studying and learning.

The production of knowledge

Under the discussion of the distribution of space, the question was raised whether knowledge was presented as a social product produced in the communication between people or if it was presented as an endeavour of the individual in contact with the source, the artefacts, as a result of the

\textsuperscript{362} This symbolic use (and role) of books will be further discussed and developed in the coming, in which discussion the case of the rotunda in Stockholm will be further scrutinised.

\textsuperscript{363} Most hierarchical and deep spatial systems assign status to that which lies deep. There are, however, cases where this is different, such as in jails or mental institutions. This, usually, is in cases where the purpose of the building is to keep that which is inside confined for the reason of ‘protecting’ the public. Markus (1993). Pp. 95-141.

\textsuperscript{364} As for the relation between status and depth, it could be further noted that there is a significant difference between depth in the system as a whole and depth in a part of the system. Deep within a branch, which in itself lies shallow, does not in the same way imply ‘high’ status as a location deep within a system emphasising depth. (e.g the children’s section in Stockholm, as discussed below.)

\textsuperscript{365} Robinson (2001), Hillier/Hanson (1984).
distribution of space. The same question can be raised on the distribution in space – there are still aspects and factors of critical importance affecting such a representation that has not yet been covered, such as the design and distribution of places of study, reading and social interaction.

As a starting point, it is worthwhile to take a deeper look at the distribution of reading places and their internal configuration – e.g. understanding them as sociopetal and sociofugal respectively, signifying arrangements that imply or promote social interaction and communication in the first case, and making such easy to avoid in the latter, but naturally also studying the distribution of the places of study in space and their relation to the artefacts of knowledge – the books.

As for the first question, there is a clear chronological movement from Stockholm, with almost all places of study arranged after a sociofugal pattern, to Växjö, where there is a clear sociopetal focus. In Stockholm, (fig 5.6) the seats are side by side, in rows of seats directed in the same direction (or apart from each other), a pattern less common in Malmö and Växjö. In the latter two, the majority of seats have a tendency to be sociopetal, promoting contact of one kind or the other between visitors.

There is further a development from ‘reading halls’ to ‘small groups’. In Stockholm large groups of persons sit in arrangements with good overview and visual control, though separated from other groups, where the arrangements in themselves provide a situation where any discussions undoubtedly is heard by and potentially disturb large groups of others. In Malmö and Växjö, on the other hand, there is a clear movement towards spreading the studying places in spaces ‘of their own’ between bookcases or sections, not too large but not too small for small groups to use. This implies a pattern of use where the intended visitors are configured as small groups, between two and eight people, who have a need or wish to be able to communicate during their studies – both through what is implied by the arrangements in themselves and through the way they are distributed in a way as to ‘not disturb’ other groups to a greater or lesser extent (fig 5.7).

Thus, the libraries represent different ideas of how ‘knowledge production’ or ‘knowledge development’ is to be performed. Looking a bit deeper, however, some other patterns in the distribution of studying places emerge. In Växjö, there is a tendency to push the actual arrangements for study deep into the system, while the seatings in more integrated or ‘shallow’ parts of the system tend to be of a more casual sort. Around the central shaft, there are even places to sit which are, in form and distribution, decidedly directed ‘outwards’, promoting contact with those moving in the main routes rather than with others sitting there. The public library as a scene in an extreme sense.

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366 Typically, a sitting group of chairs or sofas around a small table is a sociopetal layout, while back-to-back benches are sociofugal. (Urlu, Alper; Ozener, Ozan O.; Özden, Tölga; Edugu, Erincik, An evaluation of social interactive spaces in a university building).

367 These seats, notably, were almost never observed to be used, except for a few people who were waiting for others.
Through such means, the distribution of the ‘reading function’ signifies gaining knowledge as an individual process, as something performed in silent interaction with the books, or as a social process, where the communication between people is a vital part of the process.

In Växjö, however, one can raise the question whether the process of learning is considered to be of importance or requiring effort, or if it is something that supposed to just fleetingly happen in the casual interaction between people, in separation from the studying of the artefacts and what they contain. The books risk turning into solely being a symbol of knowledge, disconnected from its actual production, and the library, for better or worse, turning into a place of social interaction and exploration.

**Defining the different**

Categorisation and location in space, as described above, work through each other to produce a structure or pattern of literature, and to describe the interrelation and definition of such categories – the emerging pattern describing the field of knowledge or literature as a whole. As shown earlier, however, the categorisations of different media in the libraries do not all follow the same principles or logic. There is a *primary* categorisation of ‘the main body’ of literature, which is sorted after content, and a *secondary* categorisation of ‘other kinds’ of media or literature, separated for other reasons than content or subject. When such categories are in one way or another connected to specific target audiences this becomes also a separation or differentiation of the people it is directed to. This is perhaps not problematic if the separation is on something that cuts across for instance social class or other kinds of social or cultural categories, but it still has the effect of assigning a difference between interest in e.g. magazines, journals or newspapers and interest in more deep studies or reading, to the degree of risking to ascribe a difference between those who are interested in one or the other. It is this latter tendency which will be further evolved in the following.

The perhaps simplest and most obvious case is the children’s literature. As a very specific genre, and for a specific public, it also has gotten special treatment spatially in all three libraries – and is consequently also in all three libraries secluded. In Malmö and Stockholm this is obvious; with the children’s books in obviously own parts of the system, with to some extent different

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368 Here it is worth to note, that this specific separation is de-emphasized in Malmö, where the magazines and literature on the same subjects as a rule are co-located in space rather than separated into different buildings (as in Växjö and Stockholm).
spatial strategies than the rest of the libraries (fig 5.8). In Stockholm, the children’s literature is placed in one branch accessed directly from the entrance, with a deep series of spaces making it easy to control and with low bookcases giving a good visual overview. The children are strongly separated from all other visitors and the spatial branch in which they are placed – a deep series – express a need or a wish to make this separation even stronger. In both libraries, the children also have their own cloakroom, own reading places, information desks and so on, creating a mini-library within the library, and the sections are characterised by high visual control and controllability.

The way the separation is made in Växjö is perhaps less obvious – and to some degree hidden by an illusory openness and connection. When studied closer, there is a strong spatial separation between the children and the rest of the visitors – in basically the same ways as in Malmö and Stockholm. Once inside the library proper, the children are effectively separated from the others, the main contact being through the ‘entrance’ into this part of the building. Empty space and fairly large distances, both configuratively and metrically, separate them from the rest – space that is easily controlled. They have, as well as in the other libraries, a cloakroom of their own – though once again hidden. The character of the children’s section is also strongly influenced by spatial characteristics of control and controllability.

This leads to children (and their parents) to large extents being separated from other parts of the libraries, while ‘non-children’ rarely have reason to enter the world of children’s books. In this way, children (and their parents) are singled out and separated from other visitors, not only giving them their own section – but also implying they should not come to the other sections. The spatial separation is signalling a need to keep them apart, that reaches further than the times when they are actually there to find children’s books. Children are a disturbance, and should stay in their own, specially assigned, section.

In the case of children this is perhaps not that problematic – parents have a need to be able to keep their eyes on their children, children tend to make a lot of noise which might disturb other visitors and there are all kinds of literature directed specifically to children – factual books, stories, fairy tales

\[569\] Worth noting is, that this spatial composition was not intended by Gunnar Asplund, and in the first years the children’s section had its own entrance, placing, for instance, the storytelling room close to the entrance to the section. Winter (In Gran, 2002). The basic spatial division and layout was, however, still the same with the above discussed separation to some extent even stronger. The basic form of the section was still serial, and placing the access to the children’s section in a completely different entrance signifies the need of separation even stronger, no matter the expression of the entrance. The division is there, and no formal expression can upheave it.
et cetera. One could easily argue that having these mixed with other literature would be confusing for both children and, perhaps even more so, adults. The singling out of children as a category, however, keeps them to ‘their own’ books for better and worse.

There are other, more problematic separations, however. In similar ways as with children’s books, all three libraries separate the talking books — the literature for those with for one reason or other weak eyes or otherwise lower reading capability than the ‘intended’ visitor of the library.\(^{370}\) They are consequently located to the side, separated from other kinds of literature, close to the entrance and always connected to points of information and/or control from the personnel. Though this is probably motivated by utilitarian reasons — those with bad sight supposedly would have problems navigating through the entire library in order to find what they want — these sections also have a tendency to be put in locations that are somewhat off or problematic.\(^{371}\)

One problem in these examples is that the separations to some degree are based on physical or mental characteristics that are more or less impossible to hide for those categorised. As the spaces for talking books are very clearly separated and by the spatial strategy defined as different, they imply — in the same way as the children’s section — a difference or non-belonging of those visiting. One can not say either, as has at times been suggested, that the categorisation of talking books is simply based on them ‘being another media’, as they are also — consequently — separated from other instances of the same ‘other media’ — music CD’s, cassettes and LP’s. The separation, for whatever reasons, goes further than that. While CD’s and music in different ways are distributed in a way that imply some kind of importance, the talking books tend to be placed in more problematic positions related to both general flow of movement, relation to other sections and spatial and formal expression of the building. Suppose a person with reading disorder, or an immigrant, has a tendency to be ashamed of his or her situation for one reason or the other, or feel ‘outside’ or ‘not belonging’. Such people, already a socially weak group, are then confronted by their difference and separateness when visiting the library. The section’s position close to the entrances could also, in this way, be viewed as problematic, as everyone walking in or out in this ‘differentiated’ space always risk being seen. This is perhaps not what they all want to be. By being seen there, they to some degree admit their difference or disability.

\(^{370}\) One (potentially, at least) large group of customers would be those with difficult degrees of dyslexia or those who have not yet learned to read (or do so badly), and immigrants — especially from the ‘third world’.

\(^{371}\) The least problematic placement of such literature is in Växjö, but an at first perhaps integrated position is problemised by the fact that it is located before the movement into the library proper is ‘completed’. The shelves are also orientated in a way that does not imply the status of interest that might have come with such a position, had the content of the shelves been exposed to those passing by.
One should, however, be wary to therefore simply say that these separations are purely bad – the point here is to address problems that are caused by the distribution of certain kinds of classes of artefacts. The point here is not to point out something as either right or wrong, but to describe how artefacts, and to some extent people, are defined as in one way or the other different through the distribution of objects in space.\textsuperscript{372} There are, naturally, strong positive sides of some of the separations here mentioned, such as the ease to help those with problems reading to find what they want, the possibility for parents to in a relaxed way keep an eye on their children and the possibility for the librarians not to have to constantly keep an eye on children everywhere in the library. The placing of these categories close to the entrance of the spatial systems can also be seen as positive – enabling parents to take their children to the library without walking through the rest of the library (and possibly disturbing all other visitors) and making it easy for persons with bad sight to find their way to the talking books.

As a concluding remark, there is today an expanding market of listening books for people whose reason to choose such is not inability to read but lack of time, and thus want to listen while working, driving or perhaps lying down to sleep. It will be interesting to see how the today expanding market of listening books for everyone in the future affects or does not affect the treatment of these artefacts in the public libraries.

The need for control

The need for control, to have control over what happens to the artefacts of the library, is in many ways self-explanatory. A system of controlled loans, based on the returning of books and the notion of a need to know who has borrowed it as a kind of security for this procedure to function makes it necessary to maintain control over who borrows what books when.

The over time growing amount of literature in the libraries produce different needs and different possibilities in the patterns of surveillance and control. As Thomas Markus puts it; \textit{“Sweeping consequences followed from the acceptance that books would have to be stored in stacks, that readers needed reading rooms, and staff their own space. […] Surveillance could concentrate on the readers and the books they were using rather than on the stored items.”}\textsuperscript{373} Further advances – perhaps most significantly technological ones, has altered these patterns and modes of control further.

As established earlier, part of this control is performed through the distribution of space. The configurative layouts of the libraries all narrows down to one entrance in one way or the other, which must be passed in order to get something out. Modern technology has made it possible to more or less narrow it down to this – where a small magnetic strip in the books, controlled in the passing of the exit, prevent any intended or unintended taking of books outside, without going through the proper loaning procedures (which to a large part also have been automated).

Thus the need for control of what happens within the library is far less than it was when the library as a type emerged – at least concerning the artefacts.

\textsuperscript{372} A similar reproduction of identities or categories by distribution in space can be found in the sorting of for instance men’s and women’s fashion, which most often is accompanied by other kinds of wares that codifies them as of ‘male’ or ‘female’ interest.

\textsuperscript{373} Markus (1993).
Still, a pattern of control continues to exist – to a certain degree as a result of a striving for an expression of openness, overview and communication. There is, however, within the spatial distribution – both in and of space – certain kinds of media or literature which are treated differently, with a much higher degree of control, based on different reasons and expressed in different ways.

**Control of media**

The first, and perhaps most obvious, is the need to control the artefacts more liable to be stolen, such as music CD’s and films. Even though the CD’s in themselves are kept in the desks of personnel constantly watching over the sections, the CD envelopes, videos, LP’s and cassettes are stored in low sets of shelves, reminiscent of tables, where as good as any action or behaviour can be noticed, both by the personnel and all other visitors in the section. This codifies the artefacts as important and valuable, at the same time as it makes it possible to keep an eye on them, plausibly lowering the amount of thefts considerably. In the same manner, microfiche are under ‘strict’ control – for the same reasons, though the value of the artefacts to some extent may be of a different kind. Control is centred on the artefacts, which are either hard to replace or can be considered especially liable to be stolen.

The second areas represented by visual control are the children’s sections. Once again characterised by low bookcases, ease to overview and a reduction of entrances and exits – added to a clear separation from the rest of the library as noted above – makes what goes on in the children’s section easy to control. As in the case of the music and film sections, this can be understood, as parents and teachers would want to be able to keep track of their kids without having to run around too much. The same, probably, goes for the personnel of the library.

**Control of conduct**

The third issue regarding control is the emerging problem of *providing service* versus *exercising control*. In all libraries, information desks are spread in the spatial system in strategic points, allowing as well easy access to as well as a logic in finding them and a means for the personnel of controlling who and what moves around in the libraries. Paradoxically, this service to the public also produces a control of the public, most significantly in Växjö, where information desks are distributed in space in a continuous pattern of intervisibility between the personnel working at them. From the entrance, there is a continuous pattern of information desks visible – and thus visually controlling – the more integrated parts of the library, as well as the area around the shaft and all the ‘strategic’ points for movement. They are also turned in their facing to provide control, to the degree of constructing a pattern of ‘intervisibility’ between personnel from the entrance up to the deepest part of the library proper.

Taken to the extreme in Växjö, this is also a means through which the visitor quickly and easily can find the nearest source of information, which they can always approach from the front – something that could be seen as inviting

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374 Above, *Distribution of space: Power and Bonds.*

375 In Malmö, this is performed through placing the CD’s in a separate room, with a one way entrance and one way exit, where personnel is constantly present and keeping an eye on things, while in Växjö this is performed through placing the CD’s in low sets of shelves which can be viewed from the main information desk of as well as by everyone moving in and out of the library.
and a sign of openness. Once again, there is a complex relation between freedom, service, openness and control set at work, and one can raise the question which of them over time will be the most dominant.

The fourth example of control, however, follows another formula and another motivation – and brings perhaps more, and more complex, problems with it. As a case in point the City Library of Växjö will be used, as this is the most extreme case regarding this question.

What is perhaps under tightest control in the libraries today, though by somewhat different means, is the access to computers and their use. The computers are constantly put in places where who access them can be seen by many, preferably by personnel, and where what they are used for can be viewed as well. In Växjö, the most extreme case, this takes the form of placing all computers for public use around the central atrium, with screens facing outwards towards the main communication routes – which goes around the same atrium, putting the use of the computers under the constant surveillance of anyone passing by (fig. 5.10). Through the spatial location and design, the use of the computers is placed under a social control perhaps stronger and more effective than any control possible through technical means.

This distribution of the terminals, and their design, could be said to symbolise the openness and accessibility of the net perhaps even more than it first may sound like – as it also to some degree becomes a symbol of how, when surfing, you are possibly being watched by the unknown. They become a description of the ‘openness’ and accessibility of the net – anyone can see anything, and what you do can be seen or observed by others, of whom you are not aware.

Perhaps it is symptomatic, that of all the libraries, the terminals in Växjö are most free to use for anything – be it surfing, mailing or browsing the library’s catalogue. The terminals giving the freest access to the net – in many ways the model and symbol for freedom in today’s society376 – are also the ones being put under the tightest of controls – both mutual social control between visitors377 and control of the personnel.378

376See e.g Castells (2000).
377As derived from Bourdieu’s and Bennett’s discussion on museums and social behaviour
378This need for control is, again, not in itself necessarily a bad thing. To a large degree it is provoked by misuse of the net, where people have taken offence or been ill at ease because of what some use the terminals for if they are not under strict control. As you can be
The symbolic artefact

The role of both the library and the artefacts (books) as symbols of knowledge and literacy has been mentioned and referred to numerous times above, and is pervasive through history. Still, there are reasons to further scrutinise the buildings and artefacts from this perspective, studying how and through what means this symbolic role is performed, how the artefacts as symbols represent knowledge and how it might affect the status of buildings or artefacts in general as well specific instances or classes (or types) of either literature or knowledge.

The distribution of books and media in space assigns meaning and status to both space and artefacts in many ways – but there is one case where this interplay is perhaps more developed and pronounced than in any other cases, namely where the building and artefact ‘cooperatively’ are used to express something, to represent – in the case of libraries – literacy and knowledge, in such a strong symbolic way that the artefacts shift from being individual objects for the visitors to become primarily a representation of something other than themselves.

A case in point is the books in the upper stories of the rotunda in the City Library of Stockholm. Based on the arguments given above, the first thing to say is that, through their position in the visual and physical configuration of space there are several factors – both social and physical – making it problematic for visitors aiming to browse these books. Added to this is the fact that the books placed here – foreign languages and, on the topmost balcony, an ‘open archive’ of books that are in some kind of ‘archived’ state yet made accessible as a service to the public – are directed to a fairly small part of the visitors. Further, their integration in form and surface with the building itself as well as their distance from most visitors emphasise their role as a collective mass and a part of the building over their role as individual instances of literature. The books are the origin and expression of built form rather than something to be read.

The emerging role of these books turn into primarily being a representation of literacy or knowledge, which further problemises the access to and use of them. They are supposed to stay in place, and any removal of books from the symbol risk disrupting the powerful image of literacy evoked by the circular, multi-storied manifestation of produced literature. The entire rotunda becomes a symbol or a sign of literature – the mass of books being the significant and knowledge or literature, or literacy, the signify. this to the degree that one can raise the question to what extent this role as a symbol is transferred down also to the ground floor, participating in producing the idea of the primacy of facts and the secondary role of fiction within the library as a whole. The hall is a hall of knowledge, literacy, and is primarily to be visited and experienced. The books – the walls, the sign, the symbol – is to be left alone, undisturbed, as a powerful representation of the transcendence of the human being to culture, knowledge and literacy.
Though an extreme example of this situation, the same tendencies appear in different forms throughout the libraries, and following, all books can be seen as symbols of literacy and knowledge, rather there to assign the status of temple of knowledge to the libraries than to be read or used. As such, they represent and (re)produce knowledge in deeper ways than simply ‘being a symbol of’ knowledge – they also imply how this knowledge (as discussed above) is ordered, but also its materiality, character, stability and state of change.

In the City Library of Stockholm, material, closed, well defined, the artefacts of knowledge themselves are clearly integrated into the building – not only in the rotunda but in all of the halls the majority of shelves run along the walls, and are in many cases a from the beginning integrated part of the very building. The books and the building are, in a manner of speaking, one and the same. The temple of knowledge and the artefact of knowledge are the same. Bookcases not integrated in this way are clearly arranged primarily in relation to the walls surrounding them, perpendicular or parallel to the defining walls, placed as close to as many walls as possible (fig. 5.11).

Moving on, both in time and space, to the City Library of Malmö, the artefacts begin to free themselves of the constraint of the walls. In the old library primarily ordered after the principles set out by the building, but still compared to Stockholm separated from the walls rather than parts of or placed along them. In Henning Larsen’s addition they form principles of their own, spaces based on other geometries or logics than the building in itself. Knowledge and building start to grow apart, the symbol and its container separating themselves, as knowledge over the course of the 20th century grow more and more into an abstract phenomenon, that which can be developed by reading – but is separated from the source, the literature, which contains information (fig. 5.12).

This development goes even further in Växjö (see figure 5.13), where to the largest part the form of the building and the arrangement and order of the shelves and books are completely separated, where the form of the building as container rather turns into a problem for that which it is housing than a foundation or integral part of it.

This can be read as implying three different things. Firstly, knowledge growing from something stable, well ordered and well defined into a fleeting, changing and evolving thing that needs to be free from bounds or constraints in order to be further developed. Comparing Växjö and Stockholm, knowledge is in the first fleeting, ever-changing phenomenon, upon which every attempt of constraint causes problems and in the latter a well structured and ordered, stable field with rigorous foundations upon and into which more can be built with the security of knowing both where and how to do it.

Secondly, the separation of the artefact and the building has two effects on the artefacts as symbols. First, the role of the books as symbols of knowledge increases. As they are separated from the building, what makes the building a space of knowledge is to a lesser degree the building and the books in cooperation, but the fact that the books are there. If they were exchanged for something else, the role of the building would change. The City Library of Växjö could easily be transformed into a temple of design or temple of commerce, while such a transformation would be more difficult to perform in Stockholm. Second, the role of the books for making the building a symbol of knowledge diminishes. As being less origin and purpose of form for the building, they can more easily be replaced by other symbols of knowledge. In a way, the library has grown stronger in its role as a building for knowledge while its role as a building for literature has lessened - the books have lost in importance. This can further be traced in the move of emphasis of form and space towards social interaction and communication from the emphasis of literature, study and privacy.

Thirdly, the role of the buildings as libraries are transferred from material content to activity – they are libraries because of the activities within, in one way or the other centred on knowledge or culture, not because they are housing the symbols thereof. In Växjö, the question can be raised to what degree the books are purely symbols of knowledge, exchangeable for any other symbol, where it is the people within the library that are the important actors and carriers of knowledge, and where the books are mere backdrop for their social interaction.

Even if these interpretations are to some extent drawn to the extreme, they are corresponded to by the change of view of knowledge, and in a way a change in the principles of how social space is (re)produced and constituted over the 20th century.\cite{383}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure5.13}
\caption{The City Library of Växjö, entrance floor. The distribution of the bookcases and the form of the library collide, making any arrangement at odds with the building (Entrance floor, the new building).}
\end{figure}

\begin{footnotesize}
\footnotesize{\cite{383} In this case, the social space referred to is that which is presented by Lefebvre (1991), especially the growing importance of abstract space in the ‘capitalistic era’.}
\end{footnotesize}
5.4 Distribution through space

And so the last theme, or means, through which spatial systems produce meaning included in the methodology is reached – the distribution through space. This as a way to approach the modus operandi in which space and spatial configuration affects movement and other behaviour, distributing primarily people, but also things, in space and time – and the as a result thereof emerging meaning(s). A fundamental part of this, as discussed above, will be to understand how space and spatial configuration serve to facilitate the production and reproduction of social relations – both to other people and to objects, 'the other', including the building itself.

A basis for this discussion, is the fact that there is a significant correlation between configuration and movement in all three libraries. This means that to a high degree, movement in the libraries follows the configurative properties of the libraries' spatial systems. This is the foundation of many of the conclusions in the following, even though direct references to the empirical data are not always explicitly made.

Part of the meaning produced in space – especially of 'a' particular space, but in the long run on the system or building as a whole – is simply the degree to which an individual space (or set of spaces) is a space for privacy or social interaction. That is, starting with the basic question if there are a many or few people in a space; to what degree they are interacting with each other or something, how often encounters occur et cetera. In other words, the degree in which a building, through its spatial configuration, promotes movement, meet-

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385 “[Interior public spaces] use as places to meet, rest, see, learn and potentially interact with others becomes in itself a mode of transmission of public culture.” Doxa, Maria, Morphologies of Co-presence in Interior Public Space in Places of Performance: The Royal Festival Hall and the Royal National Theater, London, 5th International Space Syntax Symposium, 2001.
386 The primary theoretical base for this discussion being the theories of Hillier et al under the common term *space syntax*, supported by the empirical investigations of the three libraries (Above, *Social space and Social Relations and Space and Use in Three Public Libraries*).
387 The correlation implies that between 50% and 65% of the movement in the library is connected to the spatial configuration. That concerns the correlations made against a system where ‘boundaries on visibility’ are the defining property of space. Though different scales are of different importance in different libraries, the average spatial scale, as described above, is most often used since the amount of statistical data tend to be too small in Stockholm and Växjö in the 'basic' spatial scale, but also because the average scale has other advantages when discussing factors as control, overview, controllability and privacy. The correlation is both high and significant on the average scale in all libraries (i.e. if no scale is given, what is meant is the average spatial scale). Above, *The Libraries in Use*.
ings, encounters, interaction and privacy. Hence, one point of departure for the coming discussion is that part of the meaning produced in and by space, is produced through the patterns of social encounters, interaction, privacy and seclusion that emerge through how space distributes movement and being.\footnote{As Eco cites Barthes: “As soon as there is a society, every usage is converted into a sign of itself” (Eco in Leach, 1997).}

Another point of departure is Lefebvre’s statement that “[…] acts reproduce ‘meanings’ even if no ‘one’ gives an account of them.” and that “[…] space signifies, but what it signifies is do’s and don’ts.” The means through which do’s and don’ts are signified are many, of which some are developed above, but it deserves to be repeated that everyday social practice in space serves to codify space—both space in general and space in specific buildings or cities.\footnote{Lefebvre (1991), p. 142.}

Studying this ‘social practice’ hence is one way to understand how space produces meaning, a meaning that is by and large performative.\footnote{Above, \textit{The distribution of space} and \textit{The distribution in space}.} As the focus, however, is not on social behaviour but on social space, the question will be focused on how space participates in creating or reproducing these social practices and spatial performatives, and thus the parts hereof that can be related to or understood as affected or caused by space.\footnote{See either Lefebvre (1991) or Eco (in Leach 1997).}

A third point of departure is the importance of movement in this production. As far as space distributes, it does so through movement;\footnote{Performatve: Butler (1990).} the driving force behind the emergence of social interaction, and the formation of social relations, as made possible by co-presence, is movement.\footnote{“In the course of their daily activities individuals encounter each other in situated contexts of interaction – interaction with others who are physically co-present.”, “The characteristics of co-presence are anchored in the spatiality of the body […]” Giddens (1984), p. 64.} Through movement people (re)locate themselves and things in space, and through movement people come together or apart, forming “[…] strips of co-presence and interaction in time-space”\footnote{Peponis, \textit{On the Formulation of Spatial Meaning in Architectural Design}, 4th International Space Syntax Symposium, 2003.} Movement is the means through which co-presence is made possible, and thus an important key to understanding how structures and patterns thereof appear. A result is the emerging patterns of co-presence, privacy and social interaction between people and between people and things that emerge as people move around in space over time.\footnote{Above, \textit{Social space and social relations}.} It is also through movement the three-dimensionality and extension of space is experienced.\footnote{Giddens (1984).}

The discussion will start by focusing on the (re)production of relations of self-to-others, investigating how the relations to other people and artefacts are produced as patterns of encounters, interaction, privacy and use, and later on shift focus to relations of self-to-the other by studying how configuration and understanding of the spatial system, or what it contains, are linked.\footnote{“[… spatial layout and distribution of facilities modulate patterns of use, co-awareness, co-presence and potential for interaction among visitors, generating different modes of socialization and transmission of culture.” Doxa Maria (2001).}

This is one of the arguments for treating space as a system, studying the relations between spaces, since the experience of space is always connected to the memory of what lead up to that space and what spaces were passed on the way, as well as by the experience of different locations and views within the same space (see also above, \textit{Space as the narrative}).\footnote{Above, \textit{Social Space and Social Relations}.}
Encounters, interaction and privacy

Relations of self-to-others, then, are relations that to a high degree are produced through interaction and communication between people in space. Interaction that can take different forms and levels of active participation or recognition, but which all by and large have the prerequisite of people being co-present in space. Confining the discussion to co-presence, however, risk leading astray, as there are several different levels of co-presence and interaction, from the perhaps most basic form – that of seeing one another – to complex and deep discussions between several participants. Hence, different levels of interaction or communication, and how they participate in the production of meaning, will be discussed, based on the degree of active participation required by the participants, as through the concepts of *social encounters, social interaction and privacy*.

**Distribution of social encounters**

What is here meant by *encounters* is the more or less casual meeting with people (‘others’) that are basically produced by co-presence. Whether such an encounter has long duration or not, or to what degree it is consciously recognised or acted upon by those encountering each other is, for now, not the question. What is of importance is that to some degree, social relations are built up from those very encounters, not least in the *reproduction of social practice*. This since the very possibility for people to routinely handle encounters is because they follow expected schemata – and thus serve to reproduce these schemata. Encounters that for one reason or the other are unexpected or follow unexpected routines or actions serve to be recognised precisely because they break these routines, and thus force those involved to actively think on how to act or what to do. Such schemata are, in principle, *performative*, and constitutes part of the performative social structure.

**Encounters and the production of routines**

Perhaps most obviously, such routines are valuable and used when the rate of encounters is high, when you constantly meet persons or groups where you must quickly and without much thought be able to decide how to act – be it by simply passing and ignoring them or by greeting them, showing respect in one way or the other.

To some degree, the need to be familiar and at ease with the routines expected in the building or space in question, increases the higher the possibility of those encountering each other being seen by others. This proposes that the significance of routines – and the problems coming from

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401 Giddens uses such levels of interaction in his theory of structuration, based on Goffman, starting with co-presence and moving to ‘focused interaction’. It is from these six ‘types’ the three levels of interaction used in this thesis are derived. Giddens (1984), pp. 68-73.
402 As Giddens (1984) describes it, large parts of the social life – what makes it possible to go on with life – is the routinisation of day-to-day life which enables us to continue our lives after ‘automated patterns’ of actions used to respond to most normal situations emerging in daily life. Such routines are parts of the performative social structure. Butler (1999).
403 "The fictity of institutional forms does not exist in spite of, or outside, the encounters of day-to-day life but is implicated in those very encounters." Giddens (1984), p. 69.
405 Butler (1990).
Figure 5.14 – The promenade through the City Library of Växjö from the entrance into the library proper (unshaded). It is quite long and leads past a large amount of low shelves and seatings, as well as a lot of personnel desks, exposing any visitor to the library proper for both meetings and the eyes of a lot of people – both visitors and personnel. (See also the VQA analysis in chapter four)

As is the case with the City Library of Stockholm, the lack thereof – is higher in visually well integrated and highly used spaces. An extreme case would be the long way from the entrance to the library proper in Växjö, where you are exposed to meetings and the surveillance of practically everyone in the ‘old’ building the entire way (fig 5.14). On the other hand, the possibilities to ‘disappear’ in the mass increases the more people are around. The degrees – both ‘absolute’ and relative – of control, controllability and integration, however, seem to suggest different degrees of need of knowing and using such routines, as you are put to different degree of scrutiny and control depending on the situation. Thus it could be assumed that spaces of high controllability, high integration and with a strategic location (e.g. ‘bottlenecks’ in the system) serve as important when it comes to reproducing social practice – and that they, furthermore, tend to promote the performatives of the ‘dominant classes’ – those who know how to act and what to do in the library.

Seen in this way, the prolonged, highly controlled and very open, yet narrow, entrance through the City Library of Växjö (fig 5.15) turns problematic, as it exposes people – for better and worse – at the same time as there are many people moving there – causing a high rate of social encounters. Comparatively, the other two libraries have either a lesser degree of control, a greater amount of freedom of choice of route or a much shorter distance which one must pass under such circumstances. As comparison, the entrance to the City Library of Stockholm is just as formal, consisting of a promenade up a long stair to reach the library, then up another long stair within. It is, however, not exposed to the same degree at all, and as such – both configuratively and socially – is a different kind of space. Thus the entrances to the libraries of Stockholm and Växjö provide formality to the libraries as they are entered, though through entirely different means. As presented in the distribution of space, the entrance into the City Library of Malmö is both fairly little controlled and leads directly to a choice, which would then provide an informal character to the entrance. Perceived diversity, multi-functionality or choice contribute to an informal character of space, while a ‘single purpose’ and controlled space such as those in Stockholm or Växjö contribute to a formal character.

406 Also supported by the findings of Doxa (2001).
408 Above, Distribution of Space.
409 See Bennett (1995), Bourdieu (1990) or above.
410 See the analyses in Chapter four, above.
Seen from this point of view, Bennett’s description of how one of the modern museums primary tasks is to teach the lower class\textsuperscript{412} how to relate to culture and force them to follow the behaviour and norms – clothing, body gesture, language, etc – of the dominant classes seems to gain strong support and become easier to understand.\textsuperscript{413} The routines taking precedence in the museums are those of the people in power, who know how to act and feel at home, and those not accustomed to these codes feel left out and adjust best they can.\textsuperscript{414} This raises the question whether this is a situation emerging from the way in which the City Library of Växjö is designed. What can be said, without doubt, is that such a development would be supported by the spatial configuration of the library.

On the other hand, the very same layout allows people to be exposed to each other in a perhaps more positive way – visually informing everyone of the diversity of the visitors of the library.\textsuperscript{415} In such a case, one could claim this has an integrating effect between ‘groups’ or ‘classes’ in the library, as they meet each other, see each other and in more or less active ways communicate with each other. The problem, however, is the lack of choice, which might as well lead to reactions of resistance to as of solidarity with the established routines and structures.\textsuperscript{416}

As a comparison, similar spaces in Malmö – the connections between the volumes – which have high degrees of control, integration and long visual and visibility ranges, provide a number of different routes possible – and highly plausible – between many of the different parts of the library. More importantly, the integration core\textsuperscript{417} – the parts of the spatial system with the highest integration – correspond to this set of different routes, meaning you do not have to leave the strategically important spaces of movement to use different route of travel from point a to point b. Undoubtedly, in Växjö the route into the library proper, and large parts of the library in itself, speaks of a combination of exposure and exposed encounters, which you have no choice but to face if you visit the library. Thus, one important question when understanding how space produces meaning is to understand how space produces social encounters of different kinds. Even if the social encounters were not producing meaning in themselves, they serve to (re)produce routines and relations between people, setting up codes of conduct and of how people in the space are supposed to relate to each other and to ‘the other’. A social performative of the building cold be said to be established.

\textit{The distribution of encounters}

Emerging in the discussion above is the question of how these encounters are distributed – and if they are ‘local’ encounters or more ‘global’,\textsuperscript{418} if it is possible for one ‘group’ to keep the most encounters within their own ‘groups’

\textsuperscript{412}Lower Class is here used for the working class and other classes of socially low status.

\textsuperscript{413}Huang (2001).

\textsuperscript{414}Foucault discussions clearly point towards how discipline and power, as a technique, more and more is performed through utility rather than other – more obvious – means, i.e. through use, or function as present and represented in society and space. Giddens (1984).

\textsuperscript{415}Providing there is diversity, of course. In the present situation, this is (roughly) the case.

\textsuperscript{416}Castells (2004).

\textsuperscript{417}Hillier (1996).

\textsuperscript{418}With ‘global’ is here, as in general in space syntax, meant encounters produced where at least one of those in the encounter is moving ‘globally’ in the system, which is not a term for distance, but stands for movement relating to the system as a whole, regardless of its size.
or if movement and space promotes meetings between people of different ‘groups’. In other terms; is space integrating or segregating through how it distributes social encounters?

To address this question the patterns of integration and movement must be studied a bit closer. Firstly, a comparison between the patterns of global integration in itself, suggesting how movement is spread in the building and to what degree such an integration pattern allows permutation. Secondly, how global and local routes intersect each other – or how global routes and local spaces of dwelling are interconnected.

The two apparent opposites in this case would at first seem to be Malmö and Stockholm; Stockholm with the, at first glance, most segregating system and Malmö with the most integrating – also if one looks at the integration core. Växjö would, once inside the library proper, as argued above, be closer to Stockholm in some ways, but closer to Malmö in others.

Before continuing this discussion, a brief return to the observations must be done. If the above discussion on encounters between groups is true, it reasonably must be corresponded to by movement patterns of the visitors of the libraries. The simplest way of observing this would be through how movement is distributed in strategic points, in Stockholm by the entrance, in Malmö on the walkways between the volumes and in Växjö primarily by the stair up, as these are strategic points of movement, and the links between ‘residences’ of different groups, within the libraries. As a general tendency, movement does follow the implications of the spatial system. In Malmö, there is a high degree of movement between the two volumes on all floors, in Stockholm, most movement is between the entrance, the loaning and information desks and the separate branches, with little movement from one branch to another, and in Växjö little movement leads to or from the stair up to or from the back of the library’s entrance floor. Consequently, the elevators in Växjö are used very sparsely.

Thus, to some degree, Malmö can be seen as the library most promoting social encounters between different ‘groups’, as there is significant movement between the different sections of the library – and therefore between groups of visitors with different interests regarding literature. This could be treated as either a result of how movement is generated by the system, or as a result of how the world in front of the work appears to be structured as a result of the perceived spatial logic. I would claim that it is just this, a result of both – the perceived logic of the world and the spatial configuration working together to produce each other, albeit in different stages of spatial practice, and thus to produce patterns of movement and perceptions of how to behave. The latter – the logic of the world in front of the work – is one, and in this case as far as I can see the one most probable, explanation as to why people in the

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419 Permutation has the prerequisite of rings in the system, as it stands for what could be described as movement from point a in the system, through point b and then back to point a without passing the same spaces twice. Penn (2001).

420 Above, *Distribution of Space and Distribution in Space*.

421 Based on the observations performed in the on-site studies. The clearest cases are Malmö and Stockholm.

422 As generated by the configuration of space ‘alone’, which would be one possible reading of space syntax theoretics, though one I do not support.

423 Above, *Distribution of space*.

424 Aside from the possibility that people in Stockholm has a much more narrow taste or interest when going to the library. Though this would seem highly unlikely, this still can be
case of Stockholm does not follow the straight route across the central hall but instead most often choose to go to the loaning desks and/or out of the library.

Further, in Malmö and Stockholm, routes pass by the most used places of study and through literature of the same ‘kind’ or ‘genre’. In Växjö, on the other hand, a pattern emerges where browsing literature in most sections can be done without having to enter the more integrated and densely used main routes of the library. Naturally, the latter can be viewed as positive, giving the visitors less disturbance while searching the bookcases, but also serve to mark the difference between being (or moving) in the library in general and studying the literature, as have already been noted as an emerging tendency in Växjö in general.

Before developing this discussion further, however, the discussion will be taken further into social (re)production – through the study of social interaction.

**The distribution of social interaction**

Taking the discussion on relations of self-to-others a step further, the more active communication that takes place in what is here called social interaction is what comes into focus, communication between participants who are aware of, participate in and intend to communicate with each other. Usually through talking. Once again this can be said to take part in the production of meaning in several ways, not least through what is communicated. That, however, is not part of this study. The focus here is, as above, rather patterns of where interaction takes place, which situations or which configurative or other spatial properties that promotes interaction and which seem to prevent it.

As a first general tendency, as is also implied by the discussions above, there is a tendency to be most social interaction in Malmö and least in Stockholm – especially between visitors. As for Malmö and Stockholm, this could to a degree be explained through sheer size or amount of visitors – but the same can not be said of Växjö and Stockholm. This, in the latter pair, goes both for the places of study and in spaces of communication or movement. A result hereof, reasonably, is a further codifying of the libraries as either a building with spaces for privacy or social interaction, depending on the dominant structure or degree of social interaction. Further, the social interaction between people is in Stockholm at large concentrated to the rotunda, while it in both Malmö and Växjö is more evenly spread. The implications seen above, thus, seem to have a general correlation to the actual degree of social interaction as well as its general location.

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425 In Malmö, the main routes for instance lead through literature on art and culture, through humanities and social sciences, and in Stockholm – once inside one of the branches, the same kind of pattern appears.

426 Above, *Distribution in Space*.

427 This, reasonably, also serves to codify the term library in its everyday use in language – so that if all libraries followed the formula of e.g. Stockholm, libraries would indeed be the buildings of ‘silence and light’ described by Hodåsy Fröberg in her work with the same title. The latter buildings, however, suggest that the concept (and ‘type’, in as far as such still exists) of library is changing – using the terms of Lefebvre (1991), both through how they are conceived, how they are perceived and how they are lived.

428 Significant for this, in a way, is that the City Library of Stockholm in the latter years have step by step moved the more ‘social’ functions such as magazines and newspapers to
Adding to what was learned through the study of distribution in space, it is possible to delve further into the emergent patterns of interaction and non-interaction in order to find regularities or non-regularities in relation between social interaction and spatial properties.

The first thing to be noted, performing such an investigation, is that per type of space (or function) there is an overall tendency to be more interaction in or close to more integrated spaces.\(^{429}\) Further, the size of the groups of seating within each category seems to partake in what generates or becomes used for interactive behaviour. The degree of interaction, thus, seem to be a result of both the design (and configuration) of e.g seating in itself,\(^ {430}\) its position in the spatial system as a whole and the spatial configuration and relations in the local area. The main point here, as this is a study of how spatial systems produce meaning, is that the configurative location of the space or function seem to have a rather profound effect on the way it is used – not only how often it is used (see also figures, chapter four).

Spatial configuration thus participates in assigning to what degree a space is of a social or private character, not only through assigning relative positions and values but also through how it brings people together or apart and promotes or prevents social interaction.

**The distribution of privacy**

Following the above, but also adding to it, comes the question of where people chose to go in search for privacy. This is not, as it might seem at a first glance, simply a result of where people ‘do not go’ for social interaction, but is often a goal in itself – for several possible reasons, one naturally being the need for peace and quiet in order to be able to study. As such, two factors can be measured in the observations – the degree to which a place of study is used by single persons and the degree to which they are used by significantly smaller groups than intended.\(^ {431}\) It must also be said, that to some degree, the wish for either privacy or interaction seem to overrule what literature you choose to study. There are people choosing more private or public places to sit far from the literature of study, which can not be explained by availability of seats.

The spaces used for ‘private’ studies clearly follows two general rules: they are spaces of low integration (and significantly further from well integrated spaces than places of interaction are) and they tend to be in cul-de-sacs – or at least in spaces with high control- and clustering values compared to their controllability.\(^ {432}\) Further, the amount of interaction in these spaces is low, as is movement (as established above).

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429 Interaction between people standing or walking mostly happen in spaces of high integration and high control, while interaction between people sitting mostly takes place in seating arrangements of sociopetal layout, close to integrated spaces. Seating arrangements directly in routes of communication has both a tendency not to be used (see e.g the sofas in the main hall in Malmö or the seating arrangement around the shaft in Växjö) and when used to be used in a more ‘supervising’ manner – waiting for someone or studying people.

430 Above, Distribution in space.

431 As e.g the round tables on the fourth floor in Malmö, according to the observations seldom being used by more than one or two persons though intended for many more.

432 Note that this is not a direct relation, but an observation that at least two of these three factors (and often all three) seem to be prominent in seating arrangements used by single persons.
Again, what is the point is not that ‘private spaces are used by few or single persons and have a low degree of movement’ – but that these two factors correlate with the global and local configurative properties of space. This, again, participates in the signifying of these spaces as ‘private’, as well as they through the means discussed earlier are signified as private by their position in the system of spatial configuration.

The production of ‘social’ meaning

Thus, through the way space distributes the movement of people, their co-presence and their encounters with each other, space produce and reproduce social codes, social relations, co-presence, the potential of social interaction and the formation of relations of both power and bonds. Spatial configuration, in how it affects spatial behaviour, serves to reproduce relations of power and support or counteract the production of relations of bonds. It does so both because of a ‘social meaning’ within the spatial configuration in itself and as a producer of ‘social meaning’ through how it, as a result of the former, emerge by the use of space. The meaning of space, in a way, reproducing itself through its dominant use.

Further, apart from reproducing meaning or social codes through how it affects behaviour or routines, the patterns, densities and forms of encounters and co-presence, interaction and privacy in itself produce meaning in and of the building. A building promoting co-presence, social encounters or interaction is with time codified with the same reference. That is, with time, buildings and spaces are codified as social, private, separating or integrating as a result of how they through movement distribute the meeting or non-meeting of people in space. A social identity of the building is formed. As seen above, this can be studied both in the building in general and in different parts of the building.

Production of literary behaviour

Another question arise, however, since we are dealing with libraries, and especially since we are dealing with public libraries – namely the role of the library as educating the public – or at least as provider of knowledge. Given the discussion above, it would be an interesting question to see if there is any connection between spatial distribution and what could be called ‘literary behaviour’. If the distribution of literature in space affects what people read or learn, then the design and ordering of libraries is an even more important question than it is perhaps considered, since it would contribute to the production of the general literary culture of its visitors – in the given cases ‘the public’.

As discussed above, there is a tendency of the loaning rate of genres at large to correlate to the integration of the space in which they are located – even more so to the observed movement. In as far as movement is a result of spatial distribution, or the distribution through space, this means that how space is distributed, and how the artefacts (books) are distributed in space is

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433 What social behaviour or status is signified by the configurative properties of space.
434 The social meaning here meant as what the social behaviour or use of the space in question, through the process of signification, is telling about both that space in particular, its role in the system and (as a sum) the system as a whole.
435 Above, The Production of Literary Behaviour: The ‘exchange rate’ of literature in Malmö follows the integration pattern. It is worth to note again that this relation reasonably is mutual – the most loaned is moved towards the more integrated (accessed) spaces, as the literature put there is loaned more compared to its ‘non-spatial attractiveness’.
part of generating the view of literature, what books are commonly read and which are not. Further, as described above, there is significant tendency that books placed either ‘on display’, in shelves which are passed by a lot of visitors, or located in many different places are borrowed a lot more than others.\textsuperscript{436}

This, perhaps not such a controversial issue, still is an important part in how libraries (re)produce meaning in society. Aside from the obvious – the selected books that are placed on display or in ‘hot spots’ are borrowed by many visitors – this means that the general planning and distribution of literature, in relation to patterns of movement of people, generate a ‘pattern’ of literature more or less read, both in terms of genres, subjects, authors, types and age. The point here is, firstly, to emphasise the relation between movement patterns and spatial configuration, meaning that it is possible to both understand and to some degree predict the effects on literary behaviour by the distribution of books in space through analysing their configurative distribution in the spatial system. Secondly, that one of the means through which libraries produce meaning in society is in how they direct the choice of reading of the people using the library.\textsuperscript{437}

Here it is interesting to note that this strengthens a view which have been discussed earlier – the tendency to promote factual literature over fiction. There is a strong tendency to place factual books in spaces to which visits are supported by different properties of spatial configuration. A visitor browsing the library for books to read would to a higher degree come in contact with factual literature than other literature, and as far as fiction comes, at least in Malmö and Stockholm, the tendency would lead towards ‘general’ fiction, whereas crime and thrillers, science fiction and fantasy are placed in more segregated sections of the library.\textsuperscript{438} Other than that, there are different emphasis in the three libraries, where Malmö clearly promotes humanities and arts, while the perhaps most ‘neutral’ in this regard could be said to be Stockholm – though the latter at the same time, as observed above, is the one most segregating between different groups of interest.

Thus, the decisions of how to distribute literature in the library is exercise of power, not only internally in the library, but on the reading habits of the visitors – and in the prolonging on their ideas, views, references and cultural values, reaching far outside the walls of the library itself.\textsuperscript{439} Also,

\textsuperscript{436} Ten out of ten books on the ‘top ten list’ could be found on two or more locations in the library – implying they were seen by more visitors, or at least a broader group thereof.

\textsuperscript{437} In support of such a thought, Giddens states that “Motives tend to have a direct purchase on action only in relatively unusual circumstances, situations which in some way break with the routine. For the most part, motives supply overall plans or programmes – ‘projects’, in Schutz’s term – within which a range of conduct is enacted.” Giddens (1984), p. 6. From the further discussion it can be deduced, that such ‘programmes’ would rather correspond to ‘go to the library’ than to the venture of finding a specific book, though the latter certainly do also exist. Further, this is supported by the observations made, where a significant majority of the people who were followed in ‘snail trail’ studies did not follow an all too goal-oriented movement pattern but a rather ‘browsing’ or ‘exploratory’ behaviour.

\textsuperscript{438} Based on interviews with personnel; To some extent, this is a result of the popularity of the latter categories. At least in Malmö, this is a conscious choice, following the reasoning of putting the ‘attractors’ deep in the system so that the visitors on their way there pass by a lot of other literature. The question can be raised, however, if spatial segregation of these genres actually contribute to a ‘broadening’ of the reading habits of those aiming for these books, or if a more integrating approach would come closer to achieving these goals.

\textsuperscript{439} Note that this is not to say that the librarians decisions on distribution of literature is an oppressive act. As Giddens (1984) states it, power is “[…] the capacity to achieve outcomes; whether these are connected to purely sectional interests or not is germane to its definition.” p. 257.
naturally, the less used to reading a visitor is, or the less ideas of what to read he or she has, the more his or her reading habits will be a result of spatial distribution – both of, in and through space.

**Performance and cognition of the spatial system**

As stated earlier, there is as far as meaning in society is concerned a problem with reading a spatial system ‘as it is’ as what produces meaning, in that it to some extent presupposes that the ‘actual’ or ‘physical’ system of space is also the perceived or lived system of social space; that it assumes that the system as it is in ‘physical reality’ is also what is conveyed to our minds. This is not necessarily true, as space and meaning are linked through use in a lot of ways. One approach to the problem would be to study how the spatial system performs – that is, if the system actually is used in the way it could or is intended to be used, or if it, through its use, is changed into something else? Is the performative of the system the same as the actual system?  

One possible way to investigate this could be through the concept of cognitive maps, representing the ‘mental image’ of space in our minds. This either as presented by e.g. Kevin Lynch in *The image of the city* or as ‘sketch maps’ as in the research of e.g. Young Ook Kim or Alan Penn. Their reports, though to some degree aiming at different questions, all find support in correlations between how people draw maps from their memory of a city and (primarily) the integration maps of the same area.

Though still in its early stages, Ruth Conroy Dalton and Sonit Bafna have delved into investigating the relations between syntactic (configurative) analysis and the ‘Lynchian’ cognitive maps. Their findings show that, at first, all of the cognitive maps and most of Lynch’s elements of the city have a strong relational emphasis over a metric one, where it is only the landmarks to which people seem to put a high emphasis on metric distance. Furthermore, of the different cognitive maps produced by Lynch, and of the different elements he has identified, there is a high correspondence between the axial map, and their integration most notably, and the paths of the ‘Lynchian’ maps.

This means that, as far as paths go, there is a fairly predictive way in how paths of importance (considered as those commonly referred to and represented in cognitive maps) are selected as based on their syntactic roles in the system. Furthermore they show that certain kinds of nodes are identifiable from a syntactic analysis, and that nodes, paths and districts are primarily represented in a configurative manner.

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440 *Performative* is here used because it stands for, as explained by Butler (1990, 1999), both the expression and that which is expressed in the same time, it is not an expression of something else. Thus, the system as used will be an expression of the system as used – which may convey an image of the system to our minds, but it will refer to itself rather than the ‘actual’ system.

441 Lynch (1960) investigated how cities are made ‘imageable’ as a tool for orientation.


444 The cognitive maps of Kevin Lynch typically has five elements: nodes, paths, districts, landmarks and edges. Lynch (1960).

445 Note that there is still room for e.g. visual properties to override this – some ‘paths’ may be selected in spite of their ‘syntactic insignificance’ due to very distinct visual properties, though this is rather uncommon.
The same tendencies are found by Kim, though he does not explicitly use the Lynchian terminology but works with maps sketched by people over an area, what he calls ‘sketch maps’,446 which are in many ways produced in a similar way as those Lynch used. These are then studied by comparing them to syntactic analysis. Here again a high correspondence can be found between the representation of spatial elements in the sketch-maps and their syntactical role in the spatial system (more integrated being more commonly represented).

The research referred to above also suggests that, aside from traditional space syntax analysis of relations, other spatial subdivisions can be of relevance for understanding how people ‘imagine’ their city or buildings.447 As of most importance to the line of argument here, however, is the connection between axial analysis and cognitive maps as perceived structure of routes – and more specifically the strong tendency of a connection between high integration and high representation in cognitive maps.448 This connection suggest that an analysis of the integration pattern of a city or a building is of importance to understand how people perceive the system, and a possible way to understand this without the tedious work of a number of interviews and laborious work with cognitive maps drawn by inhabitants.

If this is, indeed, how space (or spatial systems) is represented in our minds, this would mean that, aside from the discussion above, a study of the integration pattern of the libraries might help furthering our understanding of how these systems are perceived and what they are saying, as this causes ‘distortions’ of the system in how it is perceive, both as a sign and a logic of the world.

Such a connection, between integration, movement and cognition, would also follow the notion that social space primarily is lived space, as argued by Henri Lefebvre.449 The spaces most used would, presumably, also be the ones to which we consciously or subconsciously refer to when building up our perceived spatial system.

What then, would this mean for the libraries here studied?

Firstly, the tree-like tendencies in the City Library in Stockholm are emphasised. The ‘secondary’ connections breaking this pattern, are of low integration and reached through low-integrated spaces compared to the main route. Even more than in the ‘actual’ case, Stockholm is a tree-structure – which probably is part of why the secondary connections are to such a low degree used even though they really are not detours in many cases. As for the meaning of the system, this further strengthens the notion of Stockholm representing power, control and knowledge as heavily hierarchical and divided into distinct branches separate from one another. The notion of knowledge as something within the individual developed through interaction with the artefacts is strengthened.

The city library of Malmö, secondly, has a strong emphasis on the network of the main paths, stairs and elevators – emphasising both the

446 Kim (2001).
447 E g districts and nodes, which could be – highly tentatively – compared to for instance volumes or ‘clusters’, or spaces with in one way or the other similar properties in either social content or intent.
448 A relation that is most common in the sketch map, and less common in other types of cognitive maps used by Lynch (Conroy Dalton/Bafna, 2003). It will herein be argued that the sketch map is closest to the way in which the city or building is perceived in our day to day use of it.
449 Lefebvre (1991) pp. 39, pp. 68-.
network-like structure and spaces of movement as part of the library, plausibly increasing the impression of Malmö as a space for movement and exploring. Further, the spaces of communication and movement are heavily emphasised, signalling knowledge as a social activity, or an endeavour of exploration and searching. Even if there is a strong division between the two main buildings, the spatial emphasis is on their connection – reasonably reducing the impression of a strong difference between the two and instead making the connection into one of the main messages of the spatial system.

Växjö, however, does not follow this emphasising characteristic of previously noted impressions. The integration core follows a partly tree-like and partly linear structure, somewhat running against the circular form of the plan and representing, somewhat similar to Stockholm, knowledge as deep, branched and subdivided, though with a much more linear tendency than Stockholm – or knowledge as built up by series, to use Foucault’s terms.

It is very tempting to at this stage describe the three libraries – though this is a simplification bordering to dangerous – as of three different kinds, following the description of Foucault that relations are either trees, networks or series. Malmö has a very strong network tendency and Stockholm has a very strong tree-like tendency. The less clear case is Växjö, which to a large degree is a combination of the three, but seen through the integration map has a tendency to be a combination of a series and a tree, with some emphasis on the former – depth is more prominent than branching. Following the reasoning of Julia W Robinsson, this would symbolise, in the case of Växjö, the need to separate what’s outside from what’s inside, in Malmö the informal relations and meetings of a social system based on bonds and in Stockholm the competing desires for individual control, privacy and awareness of others.

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6. Spatial systems as producers of meaning – concluding discussion
6.1 The shape of the argument

Having performed the three analyses, those of the distribution in, of and through space in the three public libraries, it is now time to conclude the thesis. First by summarising what is learned about the individual libraries and the idea of knowledge as represented and performed by them, and then by again addressing the main question of the thesis – that of the development of a methodology for analysing meaning as produced by spatial systems. Thus, the summary to come will first be on the libraries and the idea of knowledge, as learned from the application of the methodology in its preliminary state, thereafter to move on to refining and re-defining the methodology in itself.

The summaries of the libraries will be performed as a reading of what is already learned through the analysis but with focus set a bit differently. First, an overview of the evolution of the idea of knowledge as represented by the three libraries as manifestations of the prevalent ideas of knowledge of their respective times will be presented, after which each library will be re-presented each on their own. The re-presentation of the libraries will be addressing how they as spatial systems present or produce an idea of knowledge, as learned through the analysis, albeit in a short and summarised form. Thus, the investigations presented in chapter five will be tied back into an interpretation of each library.

After having summarised what we have learned about the libraries and their representation of the idea of knowledge in applying the methodology in its preliminary state, the point will be reached where it is time to refine and present the methodology in itself. Thus, the methodology will be summarised in a coherent and distinct manner, and some of its strengths and weaknesses will be addressed – as well as its implications for architecture and research. It will also be clarified how it aids in the understanding of how spatial systems works as sources and producers of meaning in society.

The presentation of the methodology will be performed beginning with a brief discussion on the three concepts, their roles and mutual relations, as well as their relation to more 'traditional' concepts, and after this, a discussion on the method of analysis for each concept is presented. Thereafter, the methodology in its whole will once again be presented.
6.2 The three libraries and the idea of knowledge

As stated above, the summaries of the libraries will be performed as a reading of what is already learned through the analysis but with focus set a bit differently. This will begin with an overview of the evolution of the idea of knowledge as represented by the three libraries, after which each library will be re-presented on their own. This re-presentation of the libraries will aid in showing how the three distributions – the distributions in, of and through space – work together to present or produce an idea of knowledge, as learned through the analysis in chapter five.

The chronology of knowledge

Libraries have long served as a manifestation of the idea of knowledge of their time.\textsuperscript{451} As ‘temples of knowledge’ and as prestigious projects, they have also served to present this idea not only to the people directly involved, but to a much broader audience. As city libraries, the libraries herein analysed are aiming for, if not reaching, the entire city in which they are situated. Built in different times – even though the two latter, the libraries in Malmö and Växjö are relatively close to each other in time\textsuperscript{452} – they represent a chronology not only in their making but in the idea of knowledge they materialise as well. As such manifestations, they are as interesting as perhaps any text to understand the evolution of the idea of knowledge in Swedish society.

What is to come has been presented in the preceding analysis, though for several reasons not so much presented as a chronology – as the above has followed another line of reasoning, concentrating on other and more synchronous questions and issues. Yet, the question what can be read from the analyses seen as a chronology, or story, of the evolution of the idea of knowledge in the 20\textsuperscript{th} century can be raised.

Firstly, as read in the libraries, we have seen knowledge described as moving from being something found in the books, through something found through the books and social interaction, towards something where the books have a lesser role and more serve as a backdrop for its production through interaction between people. Knowledge has grown from something material,

\textsuperscript{451} For discussions on the type and role of libraries, see e.g Markus (1993) or above. chapters four and five.

\textsuperscript{452} They are, however, built in different phases of the ‘information revolution’ of the late 20\textsuperscript{th} and early 21\textsuperscript{st} century.
possible to set in stone or at least print in the medium of printed books, into something far less tangible, and the role of the books in themselves as carriers and materialisations of this knowledge has lessened. As symbol of knowledge they have both grown weaker and stronger – the books in themselves have grown less important for the idea of knowledge, but in the context of the libraries they in a sense serve in an even more symbolic role. As knowledge has been transferred into something abstract and fleeting, a process, the artefacts have instead turned from being \textit{the source of knowledge} to being \textit{representations} thereof – they represent knowledge, but do not contain it. As such, they are exchangeable symbols, and one can wonder if, thus, libraries and museums have grown closer.\footnote{As a complementary tendency, many of the museums (at least in the Stockholm area) have grown more interactive in their character, strengthening this sense of ‘growing together’.}

The second evolution we have seen, as touched upon above, is the development of libraries as primarily being about the books to primarily being about interaction between people. Not only in the strengthening of social functions such as cafés and the form of the places of study in themselves but also in the distribution of the bookcases, in the emphasis of places of social interaction and in the spatial systems in themselves the libraries has moved from a place for private seeking of deep knowledge in the libraries collection of books to places where knowledge is developed by socialising with other visitors. Further, the libraries have moved from \textit{segregating} people, keeping them apart or in privacy, to \textit{integrating} people. The systems of the two later libraries in different ways put both much emphasis on the spaces where people move and in different ways promote meetings through their performance. People are lead to one another, or into spaces where, most of the time, one can expect there to be many others – something in direct contrast to the City Library of Stockholm which through both expression and performance keep movement and encounters to the minimum. In a sense, parallel to the above evolution, libraries as public spaces have grown closer to public squares, parks, cafés and other social spaces.

Thirdly, we have seen a development of the morphology of knowledge, where the well defined and structured tree present in Stockholm has been deconstructed into a more loosely defined network or field of intricately interconnected relations and positions, where what relations are of importance is more up to the visitor, or ‘the subject’, to decide.\footnote{It might be worth to once again stress, however, that this does not mean that relations and connections are presented as \textit{arbitrary}, there is still a strongly present idea of what is related to what, and which relations are of most importance as well as how the structure in general is built up.} The City Library of Stockholm presents knowledge as an easily identifiable structure, with branches and depths, divisions and singular connections, while the City Library of Malmö presents knowledge as a diverse and complex network reaching out in many different directions and with several different connections between any position in the system and another. The City Library of Växjö, finally, represents the struggle to again gather knowledge into a comprehensible and cohesive form. Intended or not, the difficulties of subordinating the artefacts to the form in the City Library of Växjö contributes to the idea of knowledge as something that can only be contained with difficulty, something which any coherent and simple picture of always will be problematic – knowledge as something that tries to fight free from restrictions and boundaries at the same
time as attempts are made to forcibly keep it within such. Interestingly, the notion of the depth of knowledge has passed through a representation of being fairly accessible, as in the City Library of Malmö, back towards knowledge as lying deep from the public, where the difference between ‘magazine knowledge’ and ‘deep knowledge’ has been re-emphasised in the City Library of Växjö.

Fourthly, we have seen an evolution of both the need for and the mode of control of people and knowledge. Beginning in a pattern where control was important, performed through physical control of artefacts and people through bottlenecks in the spatial system and surveillance through physical means, replaced by a freedom of sorts in the City Library of Malmö where movement and halls are comparatively free from control and filled with choice, upon which control has been reintroduced by the problematic situation of service, openness and mutual visual and social control in space. Less tangible, material means of control has been introduced, somewhat as a result of but also disguised as openness and service. In a sense abstract space has moved in at the expense of physical space, and the mode of control has shifted from physical, tangible, into social and abstract, fleeting – something corresponding to both the reasoning of Foucault on power and control and Lefebvre’s analysis of the evolution of social space. 455 The concrete and empirical spatial and social analysis and the philosophical analysis and discussion corresponding perhaps even more than one might have expected.

Fifthly, we have seen how different areas of knowledge have changed their positions in the system, such as history, shifting from closest related to natural sciences and technology towards jurisprudence and political sciences – a shift from a study of stable facts to an understanding of changing systems more reliant on interpretation and discourse. Also, the relation between fiction and factual books on literature and arts has grown stronger. Even if the areas of knowledge in themselves have remained remarkably stable, even outside of the common system of categorisation (the SAB system) the relations between the areas have changed, and some areas have shifted their position in the field of knowledge over time.

Finally, there are a few themes persistent through all three libraries – the primacy of facts, a general idea of what different areas of the field of knowledge are closer and which are more apart (regardless if the field is described as a tree or a network), the books as symbols of knowledge and the libraries as, it is worth to state again, through both expression and performance representing and producing an idea of knowledge – sometimes in correspondence and harmony with one another, and sometimes in their conflicts or contradictions.

Stockholm – knowledge as a tree

The idea of knowledge produced by the City Library of Stockholm, through all three modes of distribution as presented above, is knowledge as a deep and tree-formed structure of clearly defined and separated branches, where the relations between different kinds or fields of knowledge is unproblematic. The branches of knowledge are separated in space and by space, and correspondingly in the way space performs as a social entity.

455 Foucault (in Leach, 1997), Lefebvre (2001).
The depth presented is implies depth both internally within knowledge in itself and in the relation of the library and what it contains to the world outside. Both the stair leading up to the main entrance and the long promenade up a steep stair within before reaching the library proper emphasise this, as does the following spatial depth once having reached the main hall.

Knowledge is described as private, developed in the private and silent interaction between the subject and the artefact – deep and intense personal studies. Both through expression in space, of space and the performance of the spatial system. The artefacts, the building and the performance work together to present knowledge as stable and well defined, materialised in the library, by the library and through the library – which is both the books and the building in one.

The City Library of Stockholm also describes the world as hierarchical and clearly ordered in stable and easily definable relations and positions, with separations and nodes of control, high regard for privacy and interaction between people centred to specially assigned places. Control is manifested physically in a system of bottlenecks which are directly close to personnel and the information desks. Both people and the artefacts are controlled through control over their bodies by the personnel. The City Library of Stockholm is also the library strongest separating different kinds of literature and different kinds of media. In none of the two other libraries is the border between fiction and facts as strong, and in none of the other two libraries are the listening books or children’s section as strongly separated from the other sections, be it in meters or topology. Another effect of this rigid, symmetrical and simple system is ease to find ones way and what one searches for, once the system becomes fairly familiar.

The spatial narrative of the City Library in Stockholm is also the one most controlled. Once a branch is chosen, the movement turns into a single-route movement, where the order in which further ‘reading’ of the story is available is fixed. Constructing another narrative is difficult, and where possible it is in different ways made improbable. The performance of the system further strengthens the notion of the library as a tree-like system.

Thus, you cannot encode the meaning or representation of knowledge as a network in the City Library of Stockholm – not only because you cannot make it look like a network, but because you cannot use it as a network. Without rebuilding it, the city library of Stockholm is locked in a view of knowledge as sorted with branches of knowledge, further or closer related to other branches, of depth and difference, where choices are made early and you have to backtrack not only to find your way back, but to come to another set of knowledge. The City Library of Stockholm, through its spatial configuration, performs as a hierarchical and segregating system, and as such produces a performative meaning of the same. As a spatial system, the library presents and produces a high regard for privacy and seclusion, where control of encounters is important and where people, once leaving the central rotunda are to choose their path.

The network of Malmö

The City Library of Malmö, then, has its emphasis on the network and the connections between the different fields of knowledge. They are a theme both in expression, in the spatial system and in the performance of the library. The
idea of knowledge as a dispersed field with a multitude of connections and relations is strong. Answering to the spatial system and its performance is the distribution in space, providing several different, and mixed, principles after which the literature is sorted – sometimes making the library contradict itself. More than in the other libraries, literature exist in several systems, and these systems are spatially overlain each other – they are not always separated into different parts or sections of the library.

Knowledge production, or the search for knowledge, is described both as an individual endeavour in interaction with the books and as a social activity, with a slight emphasis on ‘social studying’ – studying of books in a social situation. Small groups of study in close relation to the books are promoted and spread throughout the system, with emphasis on groups in the more integrated parts and on lone or pair seatings in the less integrated parts of the library.

The artefacts, the books, are still an important part of the library, and the theme around which much of the library is built, the source of its form.\(^{456}\) The separation of artefact, building and knowledge is, however, there and in parts the books gain more of a symbolic role than one as being a part of the production or source – such as in the ‘shelf’ in the main hall of the Calendar of Light.

The library promotes meeting and movement between groups or people of different interests, and also promotes exploration of the different parts of the system – indirectly promoting the search into different ‘branches’ of knowledge. Natural, explorative movement would lead the visitor to a number of different spaces with different kinds of literature in it, and also in contact with a lot of other people. Thus, the library to a degree performs socially integrating, where people encountering each other or being in the same space is based comparatively much on choice, and through this performance the library is codified with meanings and references of a social character. The library is a place where you see others, where you share space with other people. The formation of relations of bonds is supported at the cost of relations of power. A side effect of this is the impression of knowledge as cluttered and difficult to navigate in – something that is supported by the common complaint of Malmö as difficult to find what one searches for in.

The narratives available in a visit to the library are many, and there are many choices available to the visitors in what order to ‘read’ the library. In a way, the theme of choice that is supported throughout the library is even forced upon the visitor directly in the entrance hall.

The distribution in and of space thus supports the same idea – knowledge as a network with a number of different connections possible and worth making, corresponded to by a system emphasising multitude of connections and a sorting of books where the same volumes can be found in several different categories. The performative system serves to strengthen this character even more, and as in Stockholm the three distributions support the same idea of knowledge.

Just as the City Library of Stockholm is locked into representing a tree-like system, so is the City Library of Malmö a network which with difficulties lends itself to other ideas or images. The emphasis on the

\(^{456}\) Here, there is a strong difference between the elder building and the new addition, but the new building still has parts where the form of the building and the bookcases are integrated – or at least closely relating to each other.
communication routes and connections is to such a degree a theme of the library that removing their importance would take quite an effort, and the City Library of Malmö, following, will produce the idea knowledge as a network regardless of how literature is arranged in it, since its configurative structure both is a network and performs as a network. Some categorisations and differences can, for sure, be made stronger or more clear, and the number of systems for categorisation can be lessened or separated, but the system will still promote the connections between these categories, serving to uphold an idea of knowledge as a field of interconnected areas, where the connections between what ever is separated is an important part, and where several such connections exist between most areas.

Växjö – control reintroduced

In the City Library of Växjö, finally, we can see the collision of the image presented by form and expression of the building and the idea performed in the library’s use. On the surface, the library expresses clarity and unity of form, freedom of movement, openness and knowledge as a vast field free for anyone to navigate in. A bit deeper, however, more abstract modes of control are applied – especially on the freest media of all, the internet. The expression of freedom and network is met by a spatial system performing the opposite in many ways – depth, single route and visual control.

Knowledge is presented as fighting against the attempts to contain or control it, in the conflict between the circular form of the new building, its internal circular ‘elements’ and the problem this formal expression causes for any distribution of the shelves within the library. Knowledge is, but can not comfortably be, summarised in one form – intentionally or not, this is made clear. This is also an idea that many would subscribe to as the state of knowledge today. 457

Further, the role of the book and the studying of them have grown less important. The artefacts housed in the library, the books, gain an even more symbolic role than in the other libraries, and to some extent serve the same role as objects in a museum. Emphasised is instead social interaction or social encounters – most of all visual – both in expression and performance. To some degree knowledge is presented as disconnected from the books and primarily about social interaction in a milieu of literature. Interestingly, encounters are promoted most in highly controlled areas, where what you do and how you do it is easily monitored by both personnel and other visitors - and one can raise the question what effects this have on the emergence of spontaneous social interaction and discussions. 458

At the same time, the division between fiction and facts are less strong in the library of Växjö, and on the surface, if not in configuration, the children’s literature and the listening books are less separated from the main body of literature than in the other libraries. This, however, is a superficial difference, as they are just as strongly separated as in the other libraries even though the separation is performed through different, more abstract, means. It is not well defined walls or objects blocking them away, but the configuration

457 Knowledge is no longer, since the end of the 19th century, one, or an entity – if indeed it ever was – but a disperse field of different épistèmes and ontologies. See e.g Foucault, 2003a or Foucault (2003b).
458 See e.g Bennett’s discussions on the role of the museums.
of visual control, control of and differentiation through social borders as performed by the spatial system. Further, there is a strong separation between the easily accessible and ‘shallow’ media of the old building and the depth to the ‘library proper’ containing the books and places for study. Control is exercised through the mutual social and visual control of conduct rather than of artefacts or material.

In a configurative sense, as different from the City Libraries of Malmö and Stockholm, the City Library of Växjö is less determined in its representation of a structure. The serality and depths, as well as the focus on control, as results of the distribution of space, are comparatively easy to change as the performative system of space is highly dependent on the average scale – the distribution of bookcases and similar objects, which can be moved around. Thus, from the point of view of that which is built into the building, the high degree of control in a way is a result of the distribution of objects and functions in space, and perhaps most importantly how this, as a consequence, distributes people through space, rather than the distribution of space. The focus on depth can also be somewhat changed by redistribution in space, e.g. by placing all books on the entrance floor and moving e.g. magazines to or other media to the top floor. It would take some conscious effort, however, to create a system that is not somewhat serial in its performance, or where the conflict of the circular form and that which it attempts to contain is avoided.
6.3 The Methodology

Thus, having summarised what we have learned about the libraries in applying the methodology in its preliminary state, we reach the point where it is time to refine and present the methodology, and summarise it in a coherent and distinct manner – as well as address some of its strengths and weaknesses, its implications for architecture and research, and how it clarifies and aids in the understanding of how spatial systems works as sources and producers of meaning in society. First by a brief discussion on the three concepts, their roles and mutual relations, as well as their relation to more ‘traditional’ concepts, after which a discussion on the method of analysis for each branch is presented, leading on to the methodology in its whole once again being presented.

The concepts – the dynamic of three

At the core of the methodology lies treating space and architecture through the three distributions – distribution in, of and through space. They all correspond to a fundamental way in which space exists and people and things in space interact both with each other and with space itself, and they also cut across the traditional ways of seeing architecture – as form, function and, in rare cases, use. Just like terms such as ‘form’ and ‘function’ are not perfect, neither is the idea of the distributions. As seen above, however, they serve to clarify a few difficulties that sometimes impede our understanding of space, or our possibility of analysing it properly. They further serve to evolve the understanding of space and spatial systems further, both through the new questions or models of understanding they bring and through how they clarify and define a few key modes in which space fundamentally exists and works as a social entity. For analysing space, they further are better versed than the form-function-use triad as they are focused on space rather than object or programme.
Further, what is in this methodology caught in the analysis of distribution of and through space is in many cases obscured by distribution in space, where for instance much analysis and planning of both cities and buildings are focused on the latter. The distribution of space and, especially, the distribution through space are at times forgotten or diminished in importance – this partly since the tools for understanding the latter two are often not as developed as those for understanding the former, and partly because the prevalent terminology and theories set the focus on the former.

Thus, the distributions have potential far outside the methodology for analysing meaning here presented, as they have and potential to evolve how e.g. urban planning is performed, analysed and discussed on more levels than on the level of meaning.

The distribution of space, then, is the configurative distribution of space, primarily analysed through configurative systems of space as defined in the space syntax theories, but also through a more direct analysis of spatial concepts or direct ‘reading’ of plans and sections. The focus lies in treating the buildings or societies analysed as systems of space, where space is considered as social entities of convex character, of axial character or of visual character, as in the three models of analysis. The ordering of space, analysable through these means, implies an idea of the ordering of that which resides in or visits this system – be it knowledge or literature in the case of libraries or society as a whole in the case of cities. Even though there is no direct relation between such a spatial and social order, certain spatial systems promote certain social orders, and prevents others. The distribution of space produces meaning both as a sign and as a logic of the world in front of the work.

The distribution in space is people and things as they are located in space with intent, tied to a specific place for one reason or another. That which is distributed in space, is placed in space by someone. Thus both functions, people and artefacts can be distributed in space. Spontaneous meetings or interactions are, naturally, distributed in space, but they are a result of distribution through space and should thus not be analysed using the ideas based on distribution in space – since it will lead to misunderstandings about both space and people, as well as impede our understanding of the link between space, people and social relations. Still, the way in which people, artefacts, functions and events are distributed in space assigns status and meaning to both space and the subject or object in itself, as it defines relations to others and the other as materialised.

The distribution through space, finally, is how space distributes people, artefacts and events as a result of mainly subconscious factors. The distribution through space is something that happens, the emerging patterns of movement, interaction, meetings, privacy and co-presence caused by unconscious use of space. As much of our day-to-day conduct is based on such unconscious processes and routines, the distribution through space serves to build up and reproduce such routines and habits – hereby reproducing social structures and relations which are performative, and the meaning produced, hence is a performative meaning of architecture. Further, the use of a city or a building serve to produce the way in which we understand it, producing a more or less distorted version of the spatial logic as well as a performative system, which is both directly and indirectly producing both social relations and an idea of society – and thus meaning.

It must be said, that the borders between the three distributions are not always clear, not because of problems with their definitions but because both
space and human conduct exist in all three at the same time. Thus the overlapping becomes a strength rather than a weakness, as phenomena existing or depending on several of the distributions will also, in a well performed analysis, be treated in each, and where the combined understanding thus become even deeper and more profound. As such, the strength of the concept to a high degree lies in the triad as a whole, even though they can be of value to use each on their own.

As a final note before moving on to the methods used, it can further be said that using a set of three concepts, at least in western culture, as shown by e.g. Derrida and Kipnis, has a liberating or at least dynamic effect. Compared to the usual western dichotomies, triads (or larger sets) has a much more dynamic character where thoughts and concepts are set in motion rather than shifting into opposites as produced by dichotomies. Thus they have a perhaps more dynamic potential than the normal form-function or form-meaning relationships.\(^{459}\) None of the three concepts here used are results of the other – or rather, all are results of one another – and none of the concepts is the opposite of another. They form a dynamic set of concepts, overlapping each other and interdependent in their relation. Further, their relation to meaning, as seen above\(^ {460}\) is also dynamic, where the distributions and the meaning are, in fact, working with and through each other.

The methods

When analysing the three kinds of distribution, there are different methods and theories that serve better for each one of them, and consequently, in the methodology lies also a set of methods to be used for each. These methods are, in large, already presented through their application in the above, but will be repeated and more explicitly presented once again.

**The sign of configurative space**

The distribution of space, as seen above, is primarily analysed and understood through a hermeneutic process, and both regarded as a **sign** and as a **logic of the world in front of the work**. By ‘reading’ the spatial system – the configurative system – and interpreting what it says about both the building, the space and that which lies within, the understanding of both the underlying ideas and the ordering principle of the system can be clarified, and following, the order and structure of the world presented and producing meaning can be understood. Though partly an analysis rather of intentions than perception, it still serves as a means to understand the basic scaffold upon which much of the following is to be based.

The theoretical foundations for interpreting such a system are found in the hermeneutics of Paul Ricoeur, explaining how the process of interpretation is reliant not on the intent of the ‘author’, but on the world as it is presented by the work, constructed by and through both the parts and whole of the works in themselves and from the logic of the world they present. Thus, the meaning produced is largely based on logic, as interpretation is a process where a **world in front of the work** is produced already at first contact with the work, after which it is constantly refined and reinterpreted the more we learn, to produce a logically

\(^{459}\) See e.g Derrida (1997) and Kipnis, Jeffrey, /Twisting the Separatrix/, in Hays, 1998.

\(^{460}\) See e.g. The Distribution through Space.
coherent whole in which that which the work explicitly states has its proper, logical place. Analysis of meaning becomes, in such a hermeneutic, a process of understanding the world in front of the work, and the meaning of a work is less subjective and more predictable than what is often claimed.\(^{461}\)

The sign of the spatial configuration can be interpreted perhaps primarily through the justified graph of the convex space system, even though the axial map can contribute to such an interpretation. This sign, then, represents an overall idea of the structure of that which the building, or the spatial system, contains and both its internal relations and its relations to that which lies outside. As such, in libraries, it presents e.g., an idea of the general structure of knowledge, which exists regardless of how the literature is arranged in it.

The logic of the world in front of the work, then, is an ordering principle, a logic on the basis of which relations and positions can be deduced. The logic of the presented world, for instance, describes a logic in how relations of power and bonds are distributed – a logic in the system of social relations. Is it hierarchical, how many are connected with how many, are the relations controlled or not et cetera.

The logic and the sign are in many ways one, and work through each other. The logic, however, is more abstract and indirect, as an underlying principle for the structure, while the sign is a more conscious representation of the structure of the system, a representation of the structure.

**Archaeology in space**

The investigation of distribution in space has been performed as a kind of archaeology – by investigating what the distribution of people and things can tell us as viewed from a number of different viewpoints focusing on different sets of things or relations. The aim of such an archaeology is to find both similarities and differences in what these investigations are saying, in order to understand underlying structures and principles common or different for each ‘case’. More than the other two, the distribution in space is dependant on programme or type, at the same time as type in the traditional sense is dependant on the distribution in space, as this – as far as buildings are concerned – is what decides what functions, artefacts and people are to inhabit the space.

As archaeology, the investigations performed are of sets of things or functions, how they are distributed in space and what this says about them, about their relations and about the society or building in which they exist. Naturally depending on what buildings or systems are being investigated, what ‘fields’ to be investigated is defined by the object of study and the main question raised – in this thesis being the idea of knowledge.

Such an investigation, trying to find regularities in how people, artefacts and functions are distributed in space, presupposes a thorough empirical investigation into what artefacts and functions are in the system in question, where they are located and how they are related. From this distribution, the task is to rewrite what they say, or to by clarifying what the different distributions are saying uncover rules and regularities in how people, things and functions are distributed and through an understanding and comparison between these regularities understand how they produce meaning from how they are distributed, and how they do so not in what they explicitly express, but through the underlying order in which they are arranged and arrange people and things in space. Thus, that which is

\(^{461}\) Ricoeur (1982).
analysed is to be analysed as it is, as what meaning it conveys in their current distribution. The intention of this distribution, or its origins or reasons, is not what is under scrutiny. As such, it has similarities to the hermeneutics of Ricoeur. Archaeology is here treated resembling the idea of Foucault, as restating that which is already stated (e.g. by the artefacts, or literature) but on a discursive level.  

Another viable approach for analysis of distribution in space, complementary to an archaeological approach, would be a geographic approach. Geography, in this case, is seen as dealing with distribution in space, be it societies, cultures, materials, cities, mountain ranges or sites of interest. Analysing distribution in space as a geography in this sense, using tools such as GIS, could strengthen the empirical foundation for analysis and further enrich the understanding of how the distribution in space serve to define and produce meaning in society.

**Performative space**

The third term of the methodology stands for the understanding of space as it is used, or to analyse meaning as produced from how it is used. As far as this methodology reaches, the question is how space produces or reproduces social relations through spatial behaviour, the connection between space and use that space syntax theories and analyses can give part answer to. Thus, empirical investigations with on-site studies, investigations of correlation and understanding of how patterns of movement and use come together into social relations and meanings has been the focus, as it is in the methodology proposed.

The distribution through space serves to produce meaning in two ways. First in how it produces a social identity to spaces, spatial systems and buildings through how it produces co-presence, encounters, interaction and privacy, and second in how it produces a link between the spatial system ‘as is’ and a representation of it in our minds – either as a sign (e.g. a cognitive map) or as a logic of the world. This representation is somewhat distorted compared to the system ‘as is’, and is a system that is perceived as it is performed – hence, in a way a performative system of space.

Thus, to begin with, the distribution through space serve to codify spaces or whole systems of space with identities as crowded or sparse, private or social, hectic or calm, et cetera. This produces a signifié of the space in question, to which will be referred to whenever the space is actualised in our minds. The entrance to the City Library of Malmö is crowded and brimming with activity at almost any part of the day, and as such, it will be codified with the reference of activity, co-presence, encounters and movement. The topmost balcony of the ‘shelf’ on the other hand, is as good as always empty, and hence will be codified with privacy and seclusion – again a reference that exists also when not being there. Such codifications of social character is performed throughout the system, and both in sum and in pattern also produce a social identity and a signifié of the building.

The patterns of movement and other spatial behaviour further serves to (re)produce social relations and routines, codes of conduct, as well as construct a number of routines and norms for how to behave in the building. Thus, how space produces spatial and social behaviour, together with the understanding of structures and meanings as performative, serves as a base to

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463 e.g Hillier (1993).
understand how space produces use and behaviour, and how this serves to produce meaning for both the ones participating in the production and those witnessing it – and to further understand the codification of space through how it produce spatial behaviour and social relations.464

These references and structures, further, are for the most part produced only in the performance of them. They are not analysable without the idea of a performing subject, and are not an expression of something existing prior to their performance – and hence are performative.465 Thus, they serve to codify both individual spaces and entire systems, or parts thereof, with social character, identity and meaning. The primary understanding of this is produced through on site studies and their correlation to spatial configuration of different kinds and scales.466

The second means through which distribution through space serve to produce meaning, is through how it mediates an understanding of the distribution of space to our minds. The primary link between the spatial system as perceived and the configurative system of space ‘in itself’ lies in how it structures the cognition of space. As such, it has been shown that there is a high correspondence between integration in a system and representation in a cognitive structure of space. Thus, when analysing spatial systems, there are reasons to both analyse the distribution of space ‘in itself’ and the distribution of space as cognised through its performance – which in part is tied to its structure of integration. A complementary analysis of spatial structure and structure of integration serves to understand how the system is lived, and perceived, which leads to a further and deeper understanding of how the sign and logic of the world presented by the system is transferred to our minds.

As it stands now the understanding and analysis of how meaning is produced through the distribution through space is that which is least developed, both as understanding of how the distribution actually occurs and as an understanding of how this produces meaning in society. Thus, the range of methods must as of yet reach from direct observations of human conduct to an analysis of this performative based on social and cognitive theories and interpretations of emerging patterns of social or private behaviour or socially dense or sparse space et cetera. As has been seen, however, it is both an area where much is possible to learn and an area which, once developed, can make very valuable contribution to the understanding of space, architecture and urban planning.

The methodology again

To summarise, thus, the methodology for analysis of meaning in spatial systems is based on three investigations, each with its own methods and with common but also different theoretical and analytical foundations. The strength lies primarily in the totality of the analysis, and secondly in the way the three concepts both gives different aspects of space and its relation to society its proper space and how they provide understanding of space, each on their own.

Naturally, to be able to make use of the methodology, a question must be defined, which the application of the methodology can give answer to. Simply applying the methodology will not provide all the answers by itself, as a

466 Above, Social Space and Social Relations and Space and Use in Three Public Libraries.
methodology never does, but it must be applied with an aim, a main question or a problem — such as how the idea of knowledge is (re)produced in the libraries. Such a question does not produce itself from the application of the methodology.

Important to keep in mind is that no spatial system, at least as far as social space is concerned, exists outside of a context or a society, and much of the meaning — or what it is that serve to produce the meaning — is defined by the society and culture in which the system lies. A building can only be a library, and a library can only represent knowledge, if the society in which it exists endorses such a meaning. This, however, does not have to be either active or conscious, as it can be done indirectly by distribution both in, of and through space, producing an identity and role to the building or system regardless if such an identity or role is actively ascribed to it. Further, the meaning codified will be reliant on the three distributions and how they order people, things and events in space. The sets of meanings possible to codify or assign to a building, thus, is, as shown above, limited by the system of space — as the spatial system promotes certain meanings and prevents others, both directly and indirectly.

![Diagram](image)

*Figure 6.2 — A model of the methodology proposed in the thesis, including its relation to the more traditional terminology of form, function and use.*

Using the three concepts, which are studied through the filter of social relations, the meaning that is produced in and by the system in society can be further understood — and thus the analysis is more of what the *work* says in the society in which it is analysed than what it *did* say upon its production or what the author or architect *intended* it to say.

Further, dealing with space and meaning through the concepts of the different distributions cuts across the concepts of more traditional approaches, as they in a way deal with form, function and use but from a different point of view, uncovering things that would otherwise not have been seen and raising questions that are often neglected. The three concepts also serve to clarify the relations between space and use.

Thus, the methodology, as presented in figure 6.2, consists of an analysis of architecture as spatial systems, seen through the filter of the three distributions and how they produce, reproduce and represent social relations, and both what and how this discloses a world to us from which, together with the context in which it exists, meaning is produced. As such, even if it need be further refined both in its parts and its whole, it shows a provides the grounds for a deepened understanding of both space and the relation between space and meaning, is refined enough to already in its current state be of great value for such analysis, and prove that further research into the concepts and theories here presented are both of value and has great potential.
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Photography: Vasquez Diaz, Merja
Stockhom: Photographs provided by the library, the marketing department
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Växjö: Press Photographs, available for download
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Plans and sections provided by the libraries on request, complemented by on-site control of and changes based on recent changes.
appendix – the JASS tool
Appendix - The JASS Tool

When working with the thesis, the need to be able to produce and analyse graphs of the convex space system grew more and more important the more time spent on the project – this especially concerning justified graphs. The tools available at time were both old and of rather low performance. Thus, as part of the research project, a computer program has been produced, in cooperation with a group of students in computer science at a course given by NADA – an institution shared by KTH and the University of Stockholm.

The JASS Tool was then specified and programmed in close cooperation between me and the group of students, to produce as good and user-friendly a program as possible, to be used in the research and distributed to others needing the same.

JASS is a JAVA™-application (.jar) which runs under JAVA™ 2 for analysis of convex spaces systems. In its core it is a node-to-node graph analysis program with the possibility of drawing the graph on top of an image (a plan), after which two kinds of analyses can be performed:

- Mathematical analysis, providing RRA, control, connectivity (over customizable number of steps) et cetera. displayed either on top of the image or exportable as a table.
- The creation of justified graphs from a selected root node. The nodes can then be adjusted within each depth level, to further sort out the graph should it be needed, and hence provide a justified graph of the spatial system.

The application exports tables in text format, and graphics in .png and .svg formats, which are all agreed upon ‘open’ formats which are to be readable by most other programs.

Additional information:
Project specification by Daniel Koch for the research project architecture/complex spatial systems.
Code developed by Lena Bergsten, Tommy Färnqvist, Patrik Georgii-Hemming, Per Grandien, Christer Olofsson, Mikael Silfver, Erik Sjöstedt, Fredrik Stavfors and Marko Tokic, all students at the University of Stockholm.