Certain Virtualities

The Physical Spaces of the Academic Library during and after the Learning-centered Paradigm Shift

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“We write only at the frontiers of our knowledge, at the border which separates our knowledge from our ignorance and transforms the one into the other. Only in this manner we are resolved to write.”

Deleuze & Guattari, 1994, p. xxi

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Abstract

Throughout the twentieth century, the primary responsibility for the academic library has been to provide access to their growing collection, but during the past decades this has changed. An increased number of students enrolled at higher education, alongside an exponential expansion of digitised material have created a springboard for the academic library to enter the beginning of a new era – the learning-centered paradigm. This master's thesis aims to highlight what impacts the learning-centered paradigm shift have on the physical spaces of the academic library.

The illustrative case of Linköping University Library exemplifies an academic library that has encountered the shift in two major steps, whereof the last involved the inauguration of Studenthuset in 2019. The motives and consequences of the study object is described and later fragmentised with support from observations made on site and in the floorplans and through an assortment of concepts put forth by Gilles Deleuze. Combined, the assorted concepts form a linear chain of events describing change, which supports the understanding of the conceptual intentions of the architect, alternative outcomes, and the general impacts of the learning-centered paradigm.

The study shows that the idea of the learning-centered paradigm has been established but it is dependent on architecture, which is a slow field of knowledge, to spatially manifest it. The chance was given to the study object, but not fully taken. Instead, an academic library that in the future rather will be perceived as a hybrid library became the result. The main impact the learning-centered paradigm has on physical space is the risk of inscribing uncertainties into the building, which might evoke future intensities earlier than expected. It is not wrong to build during a paradigm shift, but it is of great importance to be aware of current tendencies.

Keywords: academic library, learning-centered paradigm, Studenthuset, Linköping University Library, virtualities, Gilles Deleuze, linear chain of events

Acknowledgements

My interest for other disciplines and how they relate to the field of architecture has grown parallel to my education in architecture. I started my studies at Chalmers University of Technology in 2014, and the first two years were spent focused on internal interpretations rather than referential understandings. During the third year an interest in norm creative design grew, which in turn brought a theoretical perspective on architecture. Earlier master's projects include the three-step participatory project *(SPARE)TIME*, where a youth centre in Hjällbo, Gothenburg was created in collaboration with a group of girls, and *Commemorative Space: A Diving Act Through Spatial Spasticity*, where the question of contemporary justification of Euclidean space was answered with a diving arena, based on Michel Foucault's ideas on discipline, and a rational method of redefining concepts from other fields of knowledge.

I would like to thank my supervisor Julia Fredriksson for her phenomenal guidance and for asking concrete questions when my thoughts were abstract. I would also like thank family; my mother Katarina, for answering every question I have had on libraries in general and on her workplace in particular; my father Claes, for the discussions and the subtle encouragement; and my siblings, Maja and Samuel, for proofreading and making this master's thesis readable. A final thank you to my friends going through the same process of creating a master's thesis, for teaching me about their subjects and for their attentive listening.

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1. Introduction

Within our time and geographical context, to become, be, or remain as a city demands for certain public institutions to exist. Among these, the library is a matter of course, and has been so for a great period of time. Statistics prove that the public library is the societal institution which the highest number of people believe trustworthy, regardless of class, gender, ethnicity, or age (Swedish Library Association, 2012; Swedish Library Association & NOVUS, 2018), and that the number of visitors at the public libraries has decreased slightly throughout the past decades (National Library of Sweden, 2018). The number of users of the academic library, on the other hand, has increased explosively (Swedish Higher Education Authority, 2019), putting the academic library to a physical test.

In Sweden, the interdependence of the higher education institution and the academic library is regulated by The Swedish Library Act (2013:801), which states that every university shall provide access to a library which in turn shall conduct library activities suitable for the specific school. The main task of the academic library has throughout the twentieth century been to provide access to their growing collection, but during the last few decades this has changed. Alongside previously mentioned aspects, the digitalisation of the collection has created a springboard for the academic library to enter the beginning of a new era – the learning-centered paradigm (Bennett, 2009).

This master's thesis is called *Certain Virtualities.* The title refers to the "specific but not explicitly named or stated" (Certain, 2020) possibilities of the study object during and after the creation of it, since it is planned during a time of change.

1.1 Presentation of Problem

The academic library has been forced to stepwise adjust to present needs by the structural changes consisting mainly of an increased number of users and the exponentially growing digitalisation. This is applicable to already existing libraries, but it becomes crucial in the creation of new library buildings. Architects are responsible for the spatial manifestation of the paradigm, but when building for a future not yet stabilised, precision is required of stated intentions.

In this master's thesis, the example of Linköping University Library is used to illustrate what might happen to library spaces when they are created during a time of change. By reason of the university being young in comparison to other higher education institutions in Sweden, it has been the subject to experimentation multiple times. During the past decade a centralising building, Studenthuset (the students' building), has been planned, built, and inaugurated. It contains the student support functions of the university whereof the library is included. The library at Linköping University had been situated in the same facilities since 1980, with an expansion made in 1998 (Igelström & Brage, 2018). In other words, before the relocation, it was a library conducted during the book-centered era, with minor characteristics of the learning-centered paradigm. The new building, Studenthuset, was finished in 2019, just in time for the Autumn

semester to start. The library aims at being learning-centered, which in this case is spatially manifested in flexible and excessive study spaces placed throughout the library's upper floors, while the most used non-fiction collection is hidden in the basement.

Through a theoretical perspective based on philosophical concepts concerning change and becoming, the illustrative case of Linköping University Library will be incrementally uncovered. The concepts are interlinked to showcase the intents of the actors, the risks, and consequences of planning during social change as well as alternative outcomes if the preconditions were different. Together these aspects will conclude the impacts the learning-centered paradigm have on the academic library.

1.2 Purpose and Research Questions

The purpose of this master's thesis is to highlight the spatially manifested changes of the academic library during the shift from the book-centered paradigm to the learning-centered paradigm, with Linköping University Library as an illustrative example. The main objective is to analyse what impacts the learning-centered paradigm shift have on the physical spaces of the academic library. The overarching research questions read as followed:

What impacts does the learning-centered paradigm shift have on the physical spaces of the academic library?

What can the architectural concept put forth in the early phase of a project exert from the philosophical counterpart?

What motives and consequences of building during social change can be extracted from the planning process of the study object and the actual building, respectively?

1.3 Delimitations

The contextual boundary which within this master's thesis operates is formed by an assortment of delimitations. These derive from the academic library's position in regard to function and context, and from the background of the author.

Place

The word 'library' refers to any kind of library. In the context of this master's thesis, the only library referred to is the academic library, unless otherwise specified. The term includes all libraries connected to a higher education institution, which 'university library' does not. 'Research library' would include what in Sweden are known as special libraries, and those are not the focal point. Additionally, the academic library aims at the building holding the main spaces inhabited by the library, thereby archives and repositories are excluded. The academic library is presented through the case study object, but the image of the academic library is partially also generalised. When generalised, it is done wi the the present state of the academic library and the geographical and juridical context of Sweden.

Time

This master's thesis requires for multiple timeframes to contemporaneously exist. The primary timeframe outlines the planning and building process of the study object, which took place between 2012 and 2019. The secondary timeframe, which also must be taken into consideration, encloses the time the study object has physically existed. However, it is primarily with the events happening within this first timeframe in mind the analysis operates. Additional framings exist as well, depending on the first determinant for the present state of the specific subject, and these are incrementally presented throughout the background.

Target Group

The questions this master's thesis discusses concern architects drawing libraries. Important but secondary are the daily users of the academic library – librarians, students, and external visitors.

1.4 Disposition

This master's thesis consists of six major chapters. In this introductory chapter, the definition of the problem and the purpose are presented together with the contextual boundaries.

The second chapter, *Theoretical Perspective and Method*, contains a theoretical background and framework for the applied concepts. It provides a general research approach as well as an introduction to the most fundamental aspects of the chosen branch of philosophy. It moves on to introduce the assorted concepts and finally it presents the chosen methods.

In the third chapter, *Background*, a foundation for the case is presented. It is divided into three parts, where the first provides a context to the academic library with a historical walkthrough of its development. After that, a presentation of the learning-centered paradigm and its predecessors is given, followed by a section on the Swedish Library Act.

The fourth chapter, *The Case of Linköping University Library*, aims to present the chosen case in two steps. Firstly, a historical context is given with the development of the organisation and the spatial adaptations in focus. Secondly, the floorplans of the current building are described.

The fifth chapter, *Analysis*, incrementally uncovers the case with support from the assorted concepts put forth in the second chapter. It consists of four parts, whereof the first gives a common ground regarding concepts. The second part introduces the assorted concepts when interlinked, and through the application of the concepts the intents of the actors are described. The third part discusses the learning-centered paradigm and visible consequences of the finished building. The fourth part discusses alternative outcomes if the preconditions were different.

The last chapter contains the conclusion, which summarises the conclusions derived from the analysis and answers the overarching research questions presented in the introduction. It is followed by references and the appendix.

2. Theoretical Perspective and Method

This master's thesis builds on the thoughts and concepts put forth by Gilles Deleuze (1925-1995), mainly in *Bergsonism* (1991) and *Difference and Repetition* (1994). This chapter supports a foundational understanding of Deleuze's philosophy, presenting the most elementary aspects of his work as a whole in relation to the field of architecture. It starts out explaining the general research approach followed throughout the project, moves on to presenting the epistemological approach Deleuze used as a foundation for his work, as well as where architecture fits within this world of thought. These sections create the foundation for the next part, which through sovereign explanations introduces the concepts used to fragmentise the case. The final part presents the methods and the material.

Deleuze was one of the most influential, prominent and, in some regards, provocative French philosophers of the second half of the twentieth century. He wrote a wide range of works on the history of philosophy, and additionally he penned studies on art, cinema, and literature. However, he is perhaps most known for his collaboration with Félix Guattari. They met in 1968, coming from separate worlds; Deleuze had a background in the academia while Guattari was an activist and psychotherapist. Throughout their common and separate *oeuvre*, language is consistently used as the ultimate tool for reinvention. Concepts from fields far from philosophy are appropriated and plural definitions are frequent. Professor Andrew Ballantyne has written multiple works on Deleuze and architecture, and he states that Deleuze's and Guattari's free usage of language and concepts insinuates that "creative misunderstanding, or misprision, is legitimate behaviour in the Deleuze-and-Guattari-world" (2007, p. 100), but he also highlights that you cannot get into the world of them, only into the world of Deleuze-and-Guattari-and-yourself. Their work is complex and engaging, but as Ballantyne points out, it is an impartial invitation to an alternative world of thought. The reason for this choice of theoretical perspective can also be traced to the above quote by Ballantyne. Deleuze's and Guattari's work was centralised around creativity and progressive thinking, which is of great importance within the early phases of architectural projects as well. Many, if not all, of the concepts which they put forth during their professional life can be associated to space in one way or another, which is why Buchanan and Lambert (2005) have argued for Deleuze to be the most spatial philosopher of the twentieth century. Architects have frequently referenced Deleuze's work a priori of this master's thesis, and his work will most certainly linger within the field of architecture for a long time.

2.1 Research Approach

The research approach for this master's thesis is built upon a concept Deleuze and Guattari presented on the first plateau of *A Thousand Plateaus: Capitalism and Schizophrenia* (1987b) – the rhizome. Emerita Professor Diana Masny specialises in rhizoanalysis, which has been a foundational tool for her contribution to the Deleuze and Guattari studies. In her work

she has used it in relation to education, learning, and language. Masny (2018) means that the ontology of Deleuze and Guattari derived from problematisation, and a foundational aspect was that they turned against transcendent empiricism and instead proposed the idea of a transcendental empiricism. What separates the two perspectives is the belief that binary systems are closed systems and do not allow for instabilities, which is an indispensable factor in civilizations. The ontology is clearly not positivist, but neither is it antipositivist. It is placing itself outside the general order of research approaches; it is its own entity, based on the rhizome as a concept used to explain structures within society.

The Rhizome was published in 1976 and made its way into the introduction to *A Thousand Plateaus* in 1980. A rhizome is a type of root, or "[a] continuously growing horizontal underground stem which puts out lateral shoots and adventitious roots at intervals" (Rhizome, 2020), which, unlike Noam Chomsky's syntagmatic tree, can grow in any direction. In a rhizome "any point (…) can be connected to anything other, and must be" (1987b, p. 7) and there are no nodes, but rather multiplicities of directions and lines of flight on the plane of consistency (1987b). This associative way of analysing provides an open system which favours creativity and mutation. The rhizome itself is an example of this, having its roots in biology and usage as a metaphor for societal relations, and additionally it explains why *becoming* was more central than *being* to Deleuze and Guattari. A rhizoanalytical approach brings tolerance to the creation of this master's thesis and it allows for thoughts on architecture to sprout in any directions within the window of time of its creation.

2.2 Deleuze's Epistemological Order

To be able to understand what roles architecture and philosophy, respectively, play within the context of this master's thesis, a turn to a foundational, epistemological order is needed. The last book written by Deleuze and Guattari, *What is Philosophy?* (1994), concurrently states the most necessary question and provides it with an answer. The question can be answered by Oxford Dictionary, where philosophy is defined as "the study of the fundamental nature of knowledge, reality, and existence, especially when considered as an academic discipline" (Philosophy, 2020) but a richer understanding of philosophy can also be articulated. Deleuze and Guattari arrange a triad of disciplines, where philosophy is accompanied by art and science. This is the most fundamental element to explain their epistemological approach. The three disciplines have certain tasks and responsibilities, and it should be of great importance not to confuse them. However, there are other disciplines of thought that might benefit from disrupting this constitution – such as architecture.

The disciplines are all creative (Deleuze, 1994, p. 5), and this creativity happens on a plane. The plane is instituted by the discipline itself and upon it, its creations operate. The designations differ depending on the discipline, but this general structure remains the same. Philosophy will for the next paragraph form an example which the additional characteristics of the discipline is ascribed to.

	(Extracts/) CREATES	NOT	ON	"WHO"
PHILOSOPHY	Concepts	General or Abstract Ideas	Plane of Immanence	Conceptual Personae
SCIENCE	Functives Prospects Functions of knowledge Propositions	Judgements	Plane of Reference/ Coordination	Figures Partial Observers
ART	Percepts Affects Sensations	Perceptions Feelings	Plane of Composition	Aesthetic Figures

Figure 1. Chart concluding Deleuze's epistemological order (Deleuze & Guattari, 1994).

As seen in the chart (Figure 1), philosophy creates concepts on the plane of immanence, which it also institutes. The plane of immanence is something Deleuze and Guattari return to multiple times throughout their writings. Immanence could be explained as the existing, or what remains within, and it opposes transcendence. The plane coexists with its concepts, and the concepts could be seen as "absolute surfaces or volumes, formless and fragmentary" (1994, p. 36), while the plane is "formless, unlimited absolute, neither surface nor volume but always fractal" (1994, p. 36). The plane is not itself a concept, but an image of thought, or "the image thought gives itself of what it means to think, to make use of thought, to find one's bearings in thought" (1994, p. 37). A figurative way of thinking is required to engender this perspective on concepts and planes, which the architect is trained to evoke.

The sciences' functions operate by themselves, as do the arts' sensations. As soon as these have been established, a philosophical concept can develop from them. The concepts are not dormant in the function or the sensation but are to be discovered (1994, p. 117). This is also where architecture comes into the picture.

"Art begins not with flesh but with the house. That is why architecture is the first of the arts" (1994, p. 186), Deleuze and Guattari states. This indicates that it is only as soon as a sensation is created by architecture, that philosophy can start making use of it. In turn this also indicates a hierarchy among the disciplines, but it might be a result of the writers' bias, coming from philosophy. One can question the constraints put on architecture, presupposing it to be an art. If we imagine architecture as one of those major disciplines – as a solitary art – without any input from other disciplines, would architecture not be reduced to sculpture? The function architecture fills, and the sensations it evokes, derives from input from other disciplines, and therefore it needs a supplementary differentiation to clarify where in the epistemological order architecture fits.

On the plateau *1227: Treatise on Nomadology—The War Machine*, a postulation of a complementing dichotomy is done. Deleuze and Guattari (1987a) means that fields of knowledge can be either royal or nomad, and

in addition to this statement, architectural theorist Fredrik Nilsson (2002) suggests architecture to be a nomad field of knowledge. The plateau starts off with the axiom "[t]he war machine is exterior to the State apparatus" (1987a, p. 351). Already here, a tonality is established. There is a war machine and a state apparatus, and it is upon this foundational dichotomy the plateau unfolds. The state apparatus possesses power which the war machine constantly fights against. The war machine does not have the same reach as the State, it is after all a machine and "[t]he state has no war machine on its own; it can only appropriate one in the form of a military institution, one that will continually cause it problems" (1987a, p. 355).

As anticipated, the war machine represents the nomad sciences, and the state apparatus the opposing royal sciences. A multitude of dichotomies and counter-terms are established on the plateau to explain the difference – among others Chess, smooth and striated surfaces, treelike organisations, homogeneities, and majorities are ascribed as associated to the state apparatus. Opposing that is the war machine which in a similar manner can be characterised by the game Go, striated or vectorised topographical surfaces, rhizomatic organisations, heterogeneities, and minorities (1987a). All of these can be elaborated upon in relation to architecture, but it is especially with the reinterpretation of the nomad fields as transdisciplinary and dependent in mind that one can believe architecture to be nomad.[1]

The prerequisites raised by the statement that architecture is a nomad art are now self-evident. Art institutes a plane upon which architecture can compose its own transdisciplinary field. In the context of this master's thesis, architecture is on the plane of composition accompanied by library history, library studies and informatics, and an assortment of interlinked concepts presented by Deleuze.

2.3 Assorted Concepts

Reinvention is Deleuze's main strategy when creating concepts. Within the referential line, they are either evoked from the history of philosophy or derived from the other two disciplines of thought. The selected concepts consist of both kinds. They are also an assortment from the Deleuze's full repertoire, chosen to suit the case and the format. Alongside the sources of origin, Deleuze's *Bergsonism* (1991) and *Difference and Repetition* (1994), philosopher, writer, and artist Manuel DeLanda has written multiple works on Deleuze. One of them is the chapter *Space: Extensive and Intensive, Actual and Virtual*, in the anthology *Deleuze and Space* (2005), where the combination of concepts is progressively put forth. Altogether they will provide enough sovereign explanation to be able to elaborate on the concepts later on.

In this world, everything alive exists within certain boundaries (DeLanda, 2005; Deleuze, 1991). We are all familiar with these boundaries; they are flexible in the sense that they can shrink and grow, but only to a certain limit. The limit, or frontier, can be set by geography, as long as we remain

1. For a further elaboration on architecture being nomadic, the chapter *Vetenskapligt tänkande – Arkitektoniskt tänkande* in *The Construction of Realities: Gilles Deleuze, Thinking and Architecture* by Nilsson (2002) is recommended.

able to associate and feel connected. These boundaries might also be definable as royal or nomad since society inescapably is hierarchised. The extensive boundaries can be seen as royal, and in- and outside these nomad boundaries exist because in addition to the extensive boundaries, there are other limits. They are zones of intensities, determined by critical points. The critical points are invading on the calm and affect lives within these zones. To differentiate between the extensive boundaries and zones of intensity, Deleuze (1991) means that the extensive boundaries are countable, or quantitatively a multiplicity, while the zones of intensity are nonnumerical multiplicities and "indivisible". DeLanda (2005) showcases this with the example of a determined amount of water, at a set temperature. When the water is divided into two, the temperature does not automatically split in half. This indivisibility is in other terms defining the intensities as "objective averages" (2005, p. 80). To produce change within the extensive boundaries, the zones of intensity are dependent on difference. Here, what differs between two zones, is the level of intensity. When producing change, the goal is to reestablish the average, and this is made through an advanced cancellation of difference in intensity. DeLanda summarises indivisibility and its suddenness of cancellation with the words "*intensive differences are productive*" (2005, p. 81).

Reappearance of the anomalies in order can be constituted by the eternal return. The eternal return is a concept derived from Nietzsche and brought up by Deleuze in the context of difference's correlation to repetition. The eternal return is mainly used in relation to identity but is relevant also in the reappearance of interruption. The goal is not to bring back the same, but a variation, and it is most remotely determining the definition of repetition (1994). Deleuze states that "[o]nly the extreme forms return – those which, large or small, are deployed within the limit and extend to the limit of their power, transforming themselves and changing one into another" (1994, p. 41).

The fifth chapter of *Difference and Repetition* (1994) begins with an exposition of diversity and difference. Here, Deleuze draws a parallel to energetics, and describes the interdependence of the extensive and intensive, the divisible and indivisible, through the exemplification "force and distance for linear energy,(…) pressure and volume for volume energy, height and weight for gravitational energy" (1994, p. 223) etc. He continues by stating that the concepts are inseparable (1994), similar to many other dualities he elaborates upon.

Throughout the process of the intensive spaces going from average and order, to the appearance of differentiation, to the advanced spontaneity and equalisation, the final return of order functions as an attractor. The attractor represents the ultimate goal, which is reached through cancellation. The formulation "attractor" indicates that the goal is already known and that it exists even before actualisation. DeLanda (2005) describes that a conceivable reason for predetermination is the possibility of the event, but he quickly mentions that this would be incorrect.

The virtual and the actual can be understood in multiple ways. Once again, consulting the dictionary will be necessary. In Merriam-Webster,

the definitions of ‘actual’ read “existing in fact or reality” and “existing or occurring at the time” (Actual, 2020). In other words, the adjective could either by used in relation to *being*, or to *moments in time*.

‘Virtual’, on the other hand, is defined as either “being such in essence or effect though not formally recognised or admitted”, i.e. possible, or “being simulated on a computer or computer network” (Virtual, 2020), which touches upon what the usage of the word only could predict at the time it was presented, and is closer to the Deleuzean definition.

Deleuze uses the concepts of the virtual and the actual instead of the well-established dichotomy *the real – the possible*, which he criticised. His main argument is the fact that there is nothing saying that the possible cannot contain reality, and therefore it is impossible to establish an opposition (Buchanan, 2018), but its matter and effect are of course more advanced than that. The attractor is neither a possibility because eventually it will become real, nor is it an actuality since it only functions as guidance. DeLanda declares that rather, the attractor acts as “*the structure of a space of possibilities*” (2005, p. 82), and among the numbers of finalisations, only a few become actualised. This indicates that the final state of the operation is not open to any result but stifled by structuralisation. The structure is real, but it remains not actual since it depends on the attractor, which is not actual. DeLanda (2005) specifies that Deleuze would call this state a real virtuality.

To expand on the concept of the virtual in relation to space, DeLanda and Deleuze (2005; 1994) turn to mathematics, more specifically to metric and non-metric spaces. Similar to mathematics, the zones of intensity are made up by several points and what matters are how they relate to each other in distance. (This could also be a rational definition of architecture.) The example of differential geometry is used to showcase how rates of change are imaginable as substitutes for distance. This makes it possible to not define a space only by its points’ distances from each other in a Cartesian coordinate system, but by its movement. Changes happen at different speeds, and by these slow or rapid (or intermediate) speeds, clusters and “neighbourhoods” can be determined without using the distance as a measurement. The climax of the explanation comes with the term used by mathematicians to describe these scenarios, the concept of manifolds, or multiplicities. At the time it was introduced, during the first half of the nineteenth century, it changed the perspective on surfaces and in extension spatiality. The multiplicity operates as “the space of all the possible states which a given system can have” (2005, p. 84). In the structure of this space, the attractor is contained as a topological invariant, which is fully real, in contradiction to the state spaces just mentioned. The manifold presupposes a series of aspects which can be divided into two concrete guidelines, which will end this chapter:

1. To analyse a space, neither two nor three dimensions are needed.

2. Instead, local information, such as rapidity or slowness, can function as the object of study. In other words, the manifold, or the multiplicity, never needs a supplementary dimension to it, and therefore it can stand by itself, immanent to the material world (2005).

2.4 Methods

For this master's thesis, the method has been an illustrative case study supported by theoretical text studies, site observations, studies of drawings, and interviews.

The reference material used for the background and theoretical framework consists of text studies done on literature. The written sources are in these parts on the subjects of library history and the philosophy by and on Deleuze. The reading of the latter started almost a year in advance, at the time for other reasons than rewording it into a master's thesis. This allowed for the subject of library history to be studied during the initial phase of the master's thesis. In the case and analysis chapters, the two subjects come together and are applied to the illustrative case, where public documents published during the planning process of the case are used as a complement to further understand the premises.

An Illustrative Case Study

There are different types of case studies. An illustrative case study is "used to describe a situation or phenomenon, what is happening with it, and why it is happening" (Hayes, Kyes & Weber, 2015, p. 8) and is commonly used to make an unfamiliar topic familiar to the audience (2015). In the case of this master's thesis, an architectural case forms a familiar object, which the perhaps more unfamiliar theoretical perspective will be applied to. The illustrative case works as a steppingstone to a general discussion on the themes of library architecture, time, and change, which the applied concepts become a part of.

Hayes et. al. (2015) explain that the purpose of illustrative case studies is to assist in creating a common platform for subject matter experts and the audience, and it comes with some risks. The case selection needs to be done carefully as to choose a representative that can be brought into a general discussion, at a size suitable for the format. It is important to differentiate between the outcome of the case study and the outcome of the general discussion since the case is only one of many examples. Illustrative case studies also come with the challenge to describe a complex subject in an understandable way. This is the reason for the digressions and extensive backgrounds.

Selected Case

The case chosen is Linköping University Library. It is selected with above mentioned features in mind. It is a single case that has been through multiple periods, but at the same time it encloses the timeframe of the master's thesis, since it has existed for just over 50 years. The case is representative of a library which has been through major spatial changes during the learning-centered paradigm shift. The changes were also made at crucial times, the first in the same period of time as when the shift was established, and the second just recently. The chosen case is also a well-known space to the author, leaving only the original state of the library unseen.

Drawings and Illustrations

Since “[t]he data collected for an Illustrative Case Study should be visually descriptive” (Hayes et al., 2015, p. 9), it is self-explanatory that it is suitable for a project within the field of architecture. The case is supported by drawings of floorplans of the three phases Linköping University Library has been through. The drawings, retrieved from Linköping drawing archive, have initially been traced with the original file as a foundation, and are later used as an illustration of the case which supports the analysis and explicitly showcases the paradigm shift. In addition, pictures taken on site have been used to clarify certain aspects of the case, and figures have been chosen to support the visual understanding.

Site Observations

Before and during the writing process, visits to the site were done. In December 2019, a tour was given which gave an in-depth overview of almost all spaces in the building. Additional site visits were made during the master’s thesis semester, one in March and two in April, to get a closer look at specific features and to take photos. The observations are used to support the analysis and to give substance to the descriptions of the floorplans.

Interviews

Two semi-planned interviews were made on the 3rd of February and the 3rd of March 2020 with senior librarian Katarina Eriksson, who has worked at Linköping University Library since 1989. The first interview was done to guarantee that the identified problem was valid, and the discussion concerned the organisation of Linköping University Library in general. The second interview was made with the drawings as a point of departure, where the functions were mapped in all three phases of the library. The first interview was transcribed and used in the background, while the result of the second can be found in the floorplans. In addition, Eriksson has been very compliant and helpful throughout the process when seeking answers to anything concerning Linköping University Library

Application of Assorted Concepts

The concepts picked up on from the readings done on Deleuze were in advance associated with each other. The common denominator for these was that they all concern change and becoming. The illustrative case is an example of a project planned and built during a time of great change, which validates the usage of the assorted concepts. The application has been done incrementally. First, a reintroduction to the assorted concept was done which interlinked them into a chain of events (see p. 52), which describes a general sequence applicable to any social change. The chain of events has been used as a model in the search for an answer to the purpose of this master’s thesis. Then, the case is applied to it which in turn required a search for motives for building during change. Later in the analysis the chain of events is extended and used to discuss alternative outcomes for the study object. The theoretical foundation has provided a common, linguistic ground for the study object to be understood through.

3. Background

The interdependent relationship between the academic library and its institution forms the foundation for the content of this chapter. Firstly, a historical context is given, where the historical tendencies of higher education institutions which might have influenced the state of the academic library, alongside essential facts on historical events. Then, the focus will shift directly towards the library and a presentation of the historical paradigms it has existed through is given. Lastly, the contemporary, juridical prerequisites for the academic library are presented.

3.1 Historical Context

The history of the academic library in Sweden stretches as far back as the history of the university. To set a timeframe for the modern academic library, the story will in this case begin in the 1950's, where one could say that the first determinants for the academic library's state today was set. In the chapter *Den högre utbildningen i Sverige under 50 år* in *Expansion, självständighet, konkurrens: Vart är den högre utbildningen på väg?* (2012) Professor Emerita in education Berit Askling concludes the Swedish higher education institutions' historical development, and the chapter functions as the main source for this section.[2]

Gradual Expansion

The increase in number of students enrolled at higher education in Sweden was explosive during the twentieth century (Askling, 2012). In the 1940's, only eight higher education institutions existed in Sweden, and together they admitted 11 000 students per year. After the end of World War II, trade and industry, as well as the public sector, slowly started to expand. The main reason was the technological advancements which made a great impact on the developments within the manufacturing industry, and in turn the need for labour. Reforms within the primary school system, as well as new secondary schools in rural (likewise urban) areas made the number of students wanting to continue their studies after the upper-secondary education increase.

To answer to this change, an inquiry of the universities was appointed in 1955 and published in 1959 (2012). It contained general guidelines for a national, strategic expansion of higher education, based on supply and demand. A set of more specific guidelines was also presented, concerning specific disciplines and universities (SOU 1959:45, pp. 436–439). The inquiry impacted resolutions coming into force the following years, all striving for effectivization and more transparent organisation of the higher education institutions. In general, a belief in education as a source of national strength and growth which also served the individual's evolvement flourished.

In 1960, Askling (2012) writes, 37 000 students were enrolled at higher education and at the end of the decade that number had increased to 125 000. The expansion of the higher education was supported by The Higher Education and University Committee of 1963 (U63), which were

2. For a more extensive background, the full chapter is recommended.

tasked with investigating a further expansion. The proposal contained new branches in medium sized municipalities, whereof Linköping was one. The structure of the education at the time allowed for students to combine subjects freely, which did not live up to the demands of the labour market, and the problem was particularly apparent within the philosophical disciplines. To solve this, the Swedish Higher Education Authority's founded another committee. The reform measures included a new orientation towards the labour market and decentralisation, which was meant to reduce geographical injustices. Further, the goal was to invite a wider age group to the possibility of higher education, to reduce the difference in prestige connected to certain disciplines, and to reduce the acceptance ratio per study place. When it was put forth in 1968 it received massive critique from students. Above all, they questioned how the proposal favoured trade, industry, and the monopoly capital. Professors also doubted the proposal, suspecting that learning would suffer due to the labour market-turned goals. The Minister for Education at the time, Olof Palme, answered the critique by conducting a reform which controlled the achievements of each student separately, and divided the semester's into shorter courses, which in turn made grading easier (Askling, 2012).

The Higher Education Reform of 1977

Before the previous reform had time to be fully established, another committee (U68) was formed to investigate dimensioning, organisation and localisation with a longer period of time in focus (Askling, 2012). It would lead up to what in hindsight can be seen as the greatest reform of higher education of the century. The reform was managed as a collaboration between the heads of the Ministry of Education, the National Board of Education, Swedish Higher Education Authority, and the National Labour Market Board, and all had reference groups representing their instances. (2012) One could believe that such a reform would gain from being carried through by the academics themselves, but that was not the case.

In total, twelve new instances for higher education were created as a result of the reform and several non-academic educations, teacher training colleges, and medical educations became part of the category. This impacted the statistics for students enrolled at higher educations, and in practice it meant 50 000 students were added to the group. As a conclusion, one could say that the reform was the end of the era of traditional hegemony within academia, and the higher education that earlier had expanded in multiple directions now grew more unanimous (Askling, 2012).

Consequences of the Reform and Parallel Developments

Askling (2012) means that it did not take long until the adjustments to the labour market which the reform had caused begun to be questioned. The reform had brought a focus on specified knowledge, and the need for general knowledge was once again valued higher. In addition, international currents influenced the public authorities which in turn also had an impact on the higher education system. It manifested itself as a belief in a goal-and-result-centered education with higher requirements for evaluation, and in

the decentralisation of decision-making concerning resource utilisation. The universities had greater capability in organising and dimensioning. (2012) Additionally, the international currents made an impact on the Swedish higher education system through the mobility scheme in Europe. The Erasmus programme was created as a part of this plan in 1987, and Sweden joined in 1992 (Erasmus Student Network, n.d.; Swedish Council for Higher Education, 2018).

The political impact students had on their education was marginalised on a central level during and after the reform of 1977 and critique seldom reached high enough in the hierarchy to effectively make a difference. On an institutional level however, the student influence had increased. The discontent increased during the 1980's, and the Swedish National Union of Students levelled critique towards low quality education and teachers not having an education in pedagogy. This became the catalyst for the next higher education inquiry (Askling, 2012).

Frihet, ansvar, kompetens (Freedom, responsibility, competence) was the name of a report published in 1992, and the title's catchwords became core values of the inquiry that later lead to a higher education reform in 1993. The reform from 1977 was a top-down reform, developed by bureaucrats, but the reform of 1993 was initiated to answer to the needs voiced by students. Continuity was another core value, expressed in *Magna Charta Universitatum* (1988). Its overarching theme – the classical, academical ideal of the university as a whole – had great impact on universities internationally. Quality, general knowledge and an educated society were now prioritised over social motives, specified knowledge and the labour market's needs. (2012)

The center-right Government of 1991 realised a deregulation of the funding- and dimensioning-based governance and instead introduced a goal-and-results-based governance. The effectivisation hoped to achieve a greater output, whilst the input was supposed to remain the same. For the higher education system, this resulted in higher independence; the universities and university colleges were now responsible for their own economy and planning, and the new resource allocation was based on performance which in practice meant the number of passed points of the enrolled students. Additionally, the universities and university colleges were also responsible for their range of courses offered, which lead to an explosion of new courses and programs, and in turn many new students (Askling, 2012).

During the 1980's, the number of students enrolled at higher education remained stable, but in the 1990's the expansion continued, Askling (2012) writes. In 1990 there were 170 000 students enrolled at higher education, and that number had increased to over 350 000 by the 2010's (Figure 2). Expansion had been one of the main tendencies since 1950, and a goal had been set in 1999 to enroll 50 percent of every cohort into higher education. This was questioned in the beginning of the 2000's, when quality once again was prioritised. Despite the goal, the number of students has never been as high as it was in 2010. The reason for this was the deep recession and a particularly large group of 19- and 20-year-olds.

The Bologna Process changed the higher education system in Sweden in

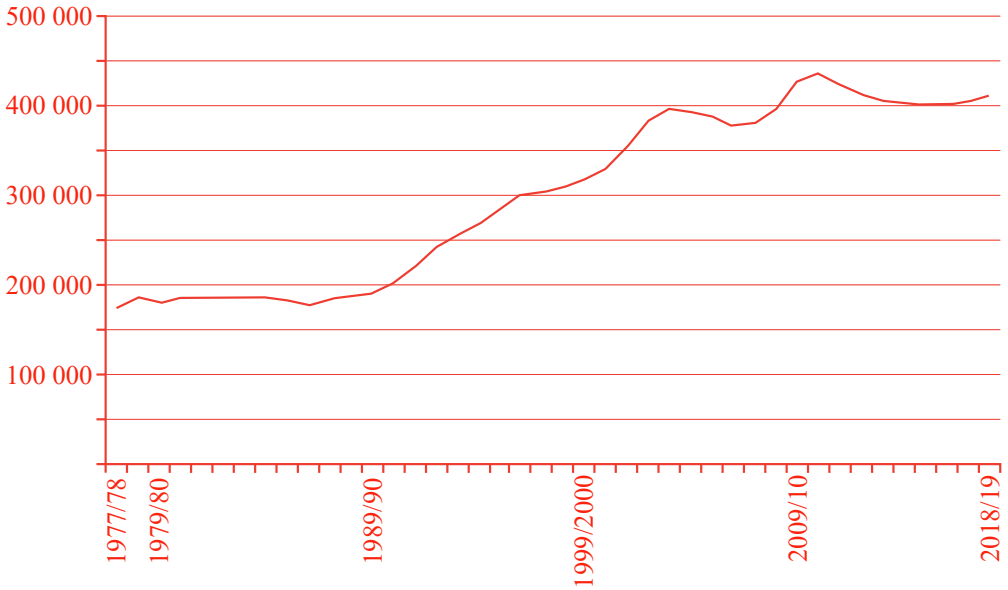

Figure 2. Number of students enrolled at higher education per academic year (Swedish Higher Education Authority, 2019).

the early 2000's. It came into force in 2007, and introduced the division of the higher education into three cycles, respectively consisting of bachelor's, master's and doctoral studies. Learning outcomes were formulated for the first two levels. In the same year, a new higher education ordinance was imposed, which brought the system of 60 credits per academic year. (European Commission, n.d.) The Bologna Process also entailed a six-year evaluation period, where the quality of all programs and disciplines where to be analysed. The general outcome of the evaluation reports was the scarce economical prerequisites, which were seen as a threat to the quality of higher education. To tackle this outcome strategic alliances were discussed between smaller higher education institutions. In practice, only one merger came into reality (Askling, 2012).

Contemporary and Future Tendencies

Askling's report on the history of the Swedish higher education was published in 2012, which leaves the 2010's unwritten. Throughout the chapter, she frequently turned to public documents and inquiries published by the Government, and if one looks to State public reports published between 2012 and today certain tendencies can be distinguished. The 2010's can be concluded in four main themes: privatisation and coordination, internationalisation, innovation, and quality threatened by plagiarism. (See for example SOU 2019:6 En långsiktig, samordnad och dialogbaserad styrning av högskolan; SOU 2018:3 En strategisk agenda för internationalisering; Dir. 2019:72 Ett utvecklat innovationsstöd vid universitet och högskolor; SOU 2017:10 Ny ordning för att främja god sed och hantera oredlighet i forskning.) Finally, further decentralisation has strengthened the higher education institutions as individual establishments, which follows contemporary tendencies in Swedish society.

3.2 The Academic Library in General

A way to understand the academic library and its historical development is to divide time into paradigms. According to Scott Bennett, university librarian and consultant on library space planning, there are three major

paradigms that define library history. In the article *Libraries and Learning: A History of Paradigm Change* from 2009, these are presented.

The early history of the library was dependent on the development of paper production and printing. Printed material, in many cases viewed as equal to information, has historically been a scarce. The printing press was invented in the 1440's by Johannes Gutenberg, but due to the high cost of paper, books remained rare and expensive until the nineteenth century, when paper manufacturing became easier through the invention of the paper machine. This time could be described as reader-centered. Bennett (2009) traces the reason back to the monasteries, where monks and nuns had access to the scriptorium (the writing room) and the library. The books were guarded, and reading did not take place *in* the library but in spaces entirely dedicated to and purposefully designed for reading. The reading room, which can be found in many university library buildings is a remnant of this paradigm since the need for it still exists. Spatially it supports "the unity of readers and books" (2009, p. 183).

When the production of books was industrialised, the increase of volumes led to the next paradigm, the book-centered. This affected the library immensely, since the shelving of books required larger spaces. The academic library's collections had remained small during the nineteenth century, but in time this too caught up with the newly arrived paradigm. With the expansion of the universities, the amount of published material increased correspondingly. Reading-centered and smaller libraries were often not extendable enough to contain the growing collections, and new libraries had to be constructed (Bennet, 2009). The fight for space, which one could say is still ongoing, started during the book-centered paradigm.

However, digitisation came to the rescue, and with it came the learning-centered paradigm in the early 1990's. This shift could be seen as a decline to the first paradigm, but what differs between them is the access to information. The introduction of digitised material called into question the function of the physical library, and an increased number of study places became a natural response. The role of the librarian shifted from that of providing service, and Bennett (2009) means that librarians to a greater extent should be thought of as educators.

Regarding the spatial impact of the learning-centered paradigm, he states that "once every space is potentially a library space—that is to say, an information-rich space—the design challenge is less with the interaction of readers and books and more with the connection between space and learning" (2009, p. 187). It becomes highly relevant to be precise in how this is spatially manifested since known planning traditions for libraries no longer are applicable.

3.3 The Swedish Library Act

If one turns to the Swedish law not much is in fact specified about the academic library. It is only the twelfth paragraph in the Swedish Library Act (2013:801) that directly controls the academic libraries, and it states that "[t]here shall be access to university libraries in all universities that are subject to the Higher Education Act (SFS 1992:1434). These libraries

shall conduct library activities within areas connected to the education and research at the university in question" (Swedish Library Act 2013:801).[3] The reference to the Higher Education Act indicates that this is applicable to all universities, but not foundations such as Chalmers University of Technology (Swedish Library Association, 2015). In addition, the fourteenth paragraph concerns the organisation of all public libraries. It reads: "For the purpose of providing access to the collected library resources in the country, libraries and principal organisers for libraries within the public library system shall collaborate." (Swedish Library Act 2013:801).[4] Together, the paragraphs are directing the Swedish higher education institutions to be independent in terms of having access to their own library, but simultaneously it is incited that collaborations between all public libraries are of importance. This contradiction is pointed out in *Den femte statsmakten: Bibliotekens roll för demokrati, utbildning, tillgänglighet och digitalisering*, where a concern is expressed about the significant difference between the academic library and other public libraries (Fichtelius et al., 2017).

3 and 4. Translations retrieved from the report *Promoting the Development of a Democratic Society: The Swedish Library Act According to the Legislator* (Swedish Library Association, 2015).

4. The Case of Linköping University Library

The chosen study object is an example of an academic library which has gone through major spatial changes during its existence. In addition, it exemplifies a library that has made great adaptations towards fulfilling the needs of its visitor. This chapter introduces the study object, Linköping University Library, in two steps. The first presents the historical context through an alternating story about the building and the organisation. The second part gives a walkthrough of the building containing the university library today.

4.1 A History of Linköping University Library

By reason of Linköping University celebrating its 50-year anniversary in 2019, an anthology was published. The librarians Peter Igelström and Christina Brage edited the book, named *Ett bibliotek i takt med tiden: Linköpings universitetsbibliotek 50 år* (2018). It will function as the main source for this section of the background. Complementary to the anthology, *Liu – ungt universitet på väg: berättelser, bilder, verkligheter* (2013) tells the history of the university in general with a focus on the earlier years.

Establishment

As previously stated, the inquiries U55 and U63 had proposed further expansion of higher education (Askling, 2012). A branch campus of KTH Royal Institute of Technology opened a Master's programme in technology in Linköping in 1963 (Igelström & Brage, 2018). Uppsala University did the same five years later and allocated some departments of their medical school to Linköping. In between these years of establishments, the library was founded to serve a new branch campus of Stockholm University on Sveagatan in Linköping. This branch campus held basic level courses in English, history, Nordic languages, mathematics, political science, business economics, statistics, and law.

The library on Sveagatan was localised in barracks, and it was supposed to support all higher educations in the city, but a lack of material was a problem during the first year, Igelström and Brage (2018) state. Two people were working at the library at the time, and their main task was to expand the collection. Books where ordered from Stockholm, and gradually the barracks also became furnished. The collection grew, and during the second year over 600 meters of shelves were filled. A common classification system for the research libraries did not exist by this time, nor did a standard for cataloguing, but by the end of 1968, newly hired librarian Allan Ranius had introduced the SAB system and initiated an extensive organisation of the catalogues.

In 1969, the three branches merged into one and Linköping University College was founded. The library, which officially had belonged to the branch campus of Stockholm University, now became part of Linköping University College, and it was moved to Platensgatan 26. To start a new library, not to mention a new university college, comes with certain

difficulties, but at the same time it allows for experimentation. The well-established higher education institutions possess a certain inertia, which makes changes harder to make. Linköping University College enabled for unconventional solutions to be put to the test. With a small in-house collection, the new library was counting on other libraries' collections to a great extent (Igelström & Brage, 2018). In line with this, the report *De vetenskapliga biblioteken: organisation och administration* (1973) was published by The Swedish Agency for Public Management and it advocated rationality and a perspective on the Swedish research libraries as one, big collection. The chief librarian at the time, Hans Baude, formed three goals for Linköping University College Library to strive towards. The collections should be better utilised, the service should be of high standard and the management should be rational. Baude also compared the academic library to the special library, which was characterised by customised services, while the need for generality was more present in public libraries. His vision was to create a library that was public, but with the benefits of the special library (2018).

The Linköping Model

Igelström and Brage (2018) mean that combined, the inquiry from 1967, the report from 1973, and the goals formed by Baude became the foundation for what later would be known as the Linköping model. In practice, the Linköping model expressed itself in a decentralisation of library services, all underneath the central library organisation. Several district libraries where opened. Knuthammar and Hjort Reksten (2013) tell that the argument for not having department specific libraries was the expenses and ineffectiveness, and district libraries were instead created to collect material on specific subjects. The strength of this system was the district libraries' services which could be shaped to fit the users' needs perfectly, and librarians could be specialised to assist researchers and students within specific subjects. Platensgatan 26 held the central library, which still contained the basic services such as the acquisition department, the janitor's office, and administration. In line with being a new university college and open for unconventional solutions, Linköping University College Library became the subject of a trial for a digitised catalogue system of the collections, LIBRIS, in 1971. The test was initiated in collaboration with the National Library of Sweden, Datasaab and L M Ericsson (2013; 2018).

A decade later, in the 1980's, the new chief librarian wanted for the Linköping model to be examined externally. The inquiry pointed out the reasons for the development of the library and deduced it to the former chief librarian's resolutions. In general, libraries are small organisations and highly dependent on and shaped by the employees, and this was certainly the case for Linköping University College during the 1970's. Igelström and Brage (2018) cannot trace any actual impacts made by the inquiry, but the preconditions had certainly changed throughout the 1970's. In 1975, the university college got the status of a university, which also included the incorporation of new district libraries. The reason for the incorporation was the higher education reform of 1977, which entailed the merge of Linköping

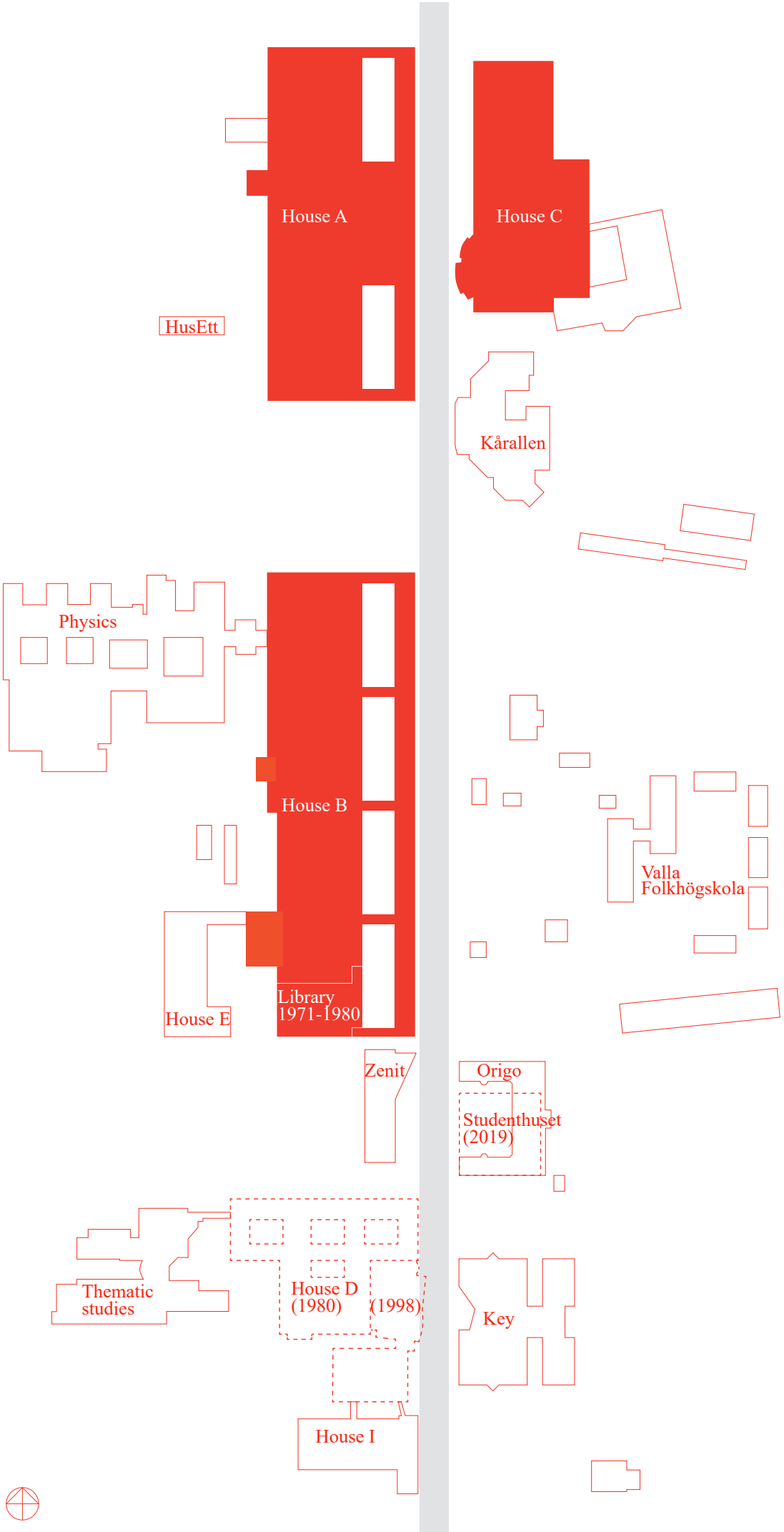

Figure 3. Campus Valla.

University and the city's teacher training college and its library, as well as the establishing of the Department for Thematic Studies and their new district library in 1981. A later outcome of the reform was the inclusion of the medical schools, which the county council had previously been responsible for when they became part of Linköping University in 1986 (Knuthammar & Hjort Reksten 2013). The idea of the Linköping model as self-supporting was not fulfilled since resources were scarce, and only three out of nine district libraries had more than three employees (2018). Conclusively, the university seemed to face several adversities by the end of the 1970's.

Campus Valla

Campus Valla was ready for inauguration in 1970, writes Igelström and Brage (2018). A couple of kilometers east of the city center, the campus was centered around a north-south axis, the Corso (Figure 3). What since 1972 are known as House A, B etc. were initially blocks, numbered in the same order. Block 1 held a district library specialised in technology and it was the first district library to function without a card catalogue. The central functions at Platensgatan 26 were moved to Block 2 during summer 1971, which in addition served the in-house researchers and students with collections on economy, technology, and natural science. Platensgatan 26 turned into a district library for humanities and social sciences.

When the higher education in Linköping moved into the spaces at Platensgatan 26 it was meant to be a temporary solution, but it took until 1980 for them to finally move out, Igelström and Brage (2018) explain. House D, named after human geographer Dagny Torbrand, was the latest addition to the campus and contained facilities for the library. The collections on humanities and social sciences were moved to House D, as were the central functions previously located at House B. Due to this reorganisation, House D came to be the location of the main library which in turn increased the number of users. AI-gruppen, represented by Bengt Hidemark, was assigned to create the new building (Linköping University et al., 2018). The library was 3 500 square meters and held an additional 1 000 square meters of administrative areas (Figure 4 and 5). The entrance was placed facing north, but it was offset from the Corso, which made it harder to localise. In addition, the entrance did not lead directly to the library, but functioned as an entrance to the building in general. Having entered the library, newly arrived material was situated to the left, followed by reference literature. To the right, the card catalogue could be found, alongside the front desk. To finally have a permanent solution for the library carried a greater budget for public art. Centralised in the entrance hall was the marquetry circle and mobile named Ikaros by Eberhard Höll, which is one of the pieces still up for display. Except from a space along the east façade with reading places facing the windows, the main hall of the library contained the collection. During the planning process some space had been reduced, but the added mezzanine solved this, and created a natural separator between different types of material (Igelström & Brage, 2018) Non-fiction and fiction were placed on the entrance floor, while the mezzanine held the collection

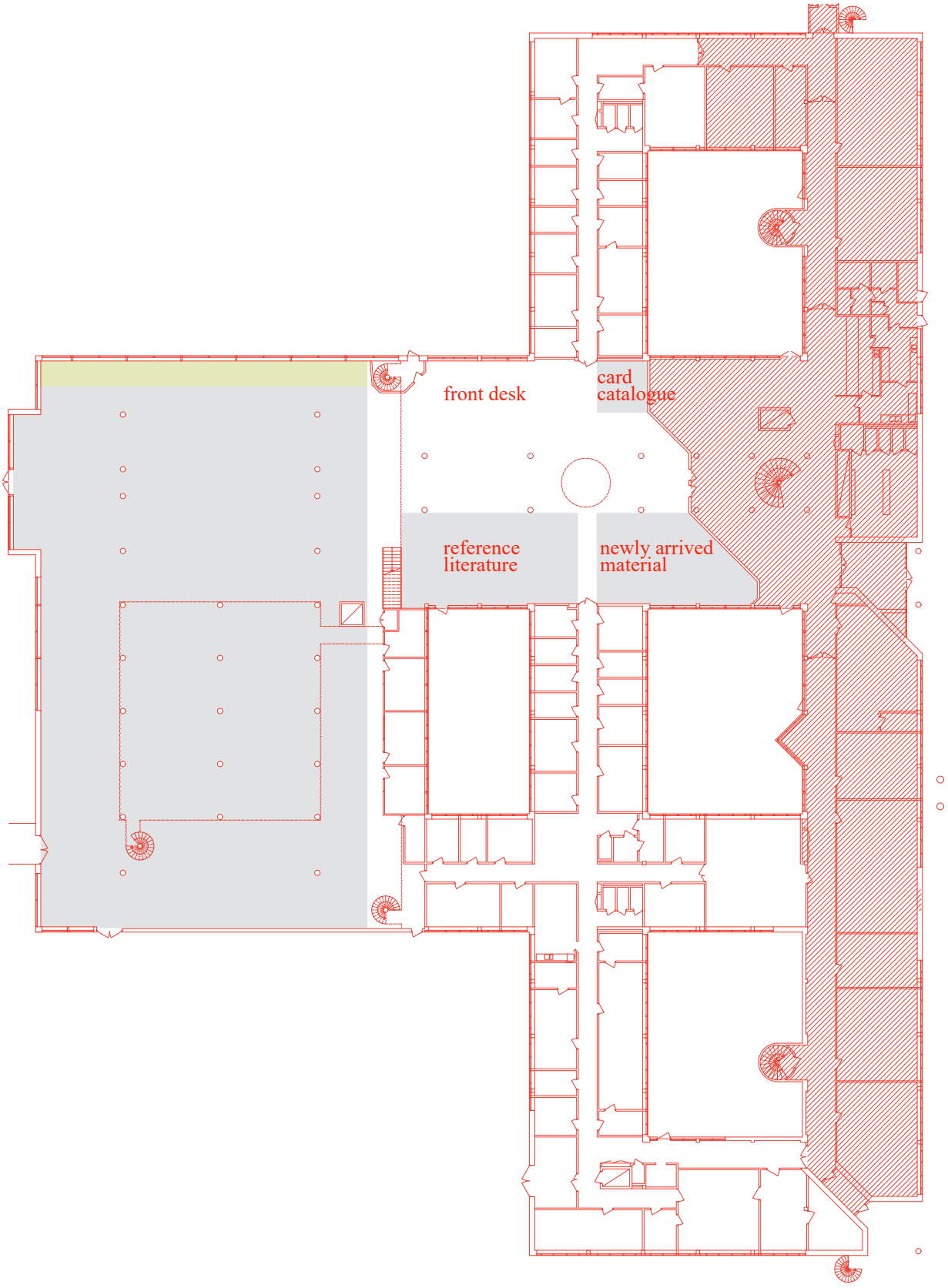

Figure 4. Floor 2, Linköping University Library, 1980, 1:500.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

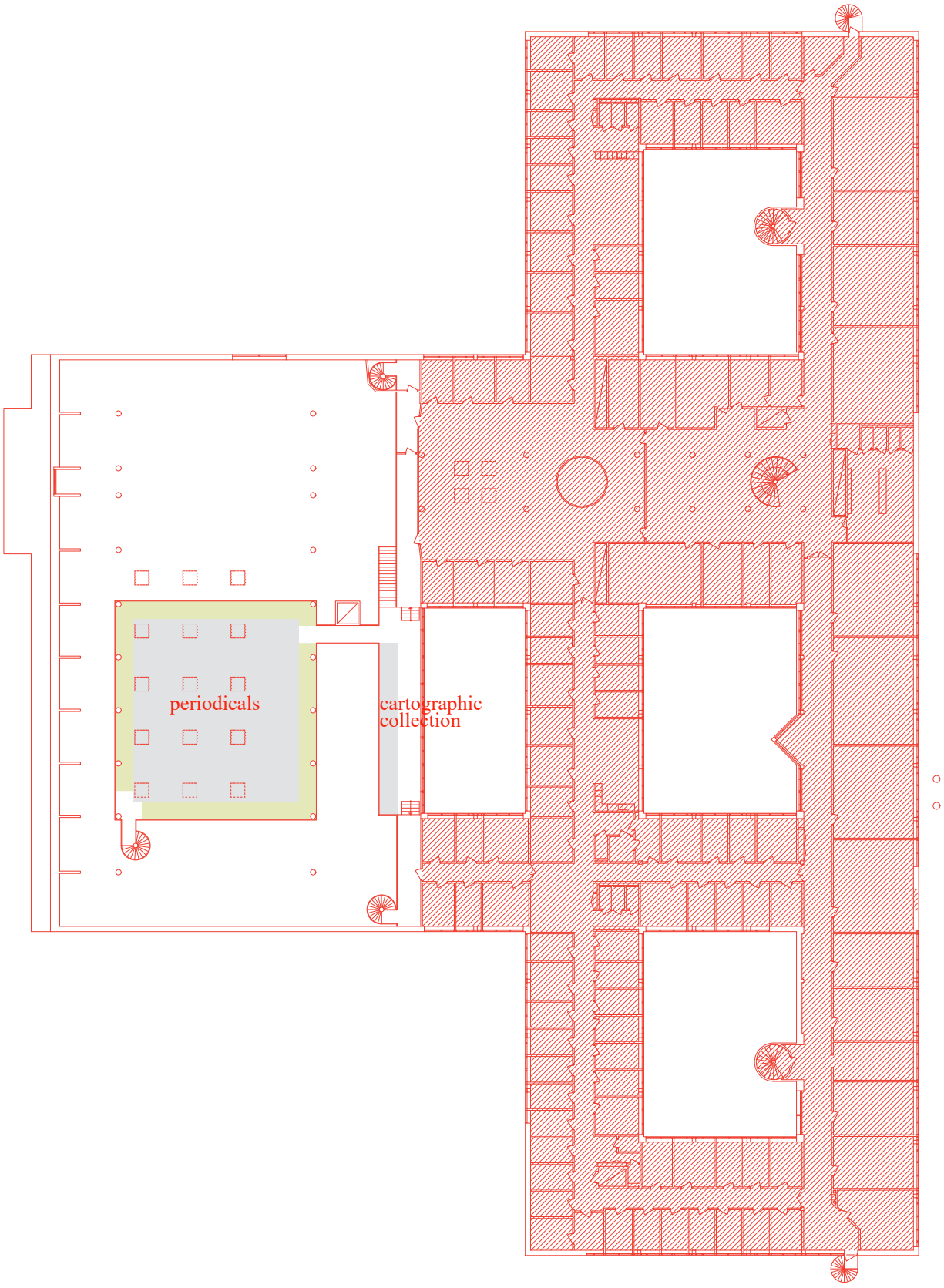

Figure 5. Floor 3, Linköping University Library, 1980, 1:500.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

of periodicals (K. Eriksson, interview, March 3, 2020). The space seems to have been airy, considering the partial double ceiling height and tilted roof.

Completion and Digitisation

The extensive need for storage space for the collection is in line with general developments of academic libraries at the time. The collection was relatively small compared to other university libraries, but the need for space is an unavoidable factor in the planning of an academic library during this period (Bennett, 2009). Keeping the book-centered paradigm in mind, one can wonder if this was the spatial completion of the academic library. It had reached as far as it could, filling the needs of researchers, librarians, and students. A library can of course never be considered complete. This is proven in the thought experiment presented by Kurd Laßwitz in the short story *The Universal Library* (1958), where every possible combination of a predetermined number of letters are combined into every possible book. The complete library is a possibility, but only realisable through algorithms.[5] The university library filled the function of the contemporary search engine through the card catalogue, and regarding the idea of the complete library, the closest one would get to a completion is the digitised catalogue system LIBRIS. Linköping University Library became addressee of legal deposit copies in 1979, but was not, as the National Library of Sweden or Lund University Library, forced to save all material. This made the collection grow further.

By this time however, LIBRIS had not lived up to the expectations, but the technological systems advanced and later it would receive international attention for connecting the geographically distanced district libraries. The reason for Linköping University Library to be suitable as the test library in the first place had been their relatively small collections, and in turn this made them reach further than many other libraries, which in comparison had not added as many titles to the database. Therefore, it took longer for other libraries to accept LIBRIS as the common database, but with time they adjusted. The use of LIBRIS as the main cataloguing system was threatened in 1981, when LIBRIS became liable to a charge. Suddenly, LIBRIS had become an expense more costly than a local cataloguing system. In 1997, the Government assigned 30 million SEK to make LIBRIS free of charge again, which alleviated the local budget, and in 2001 the web search was launched (Igelström & Brage, 2018).

Reorganisations

To tackle the adversities of the late 1970's mentioned earlier, a new chief librarian was appointed in 1984, Igelström and Brage (2018) write. Kari Marklund was replaced by Birgitta Bergdahl, and she initiated an organisational reform of Linköping University Library. Four goals were formulated, concerning higher flexibility and better utilisation of existing resources, higher user influence, better service, and competence development for staff. To reach these, a key aspect of the reform was to

5. See the website *libraryofbabel.info*, a virtual library generating every possible combination in a similar manner as in Laßwitz short story, created by Jonathan Basile.

merge the existing departments within the organisation, and the district libraries were combined into four main objects, divided by subject: the teacher training programmes, technology/natural sciences, humanities/ social sciences/thematic studies and medicine/healthcare. These units were responsible for ordering, cataloguing, and borrowing- and reference services. The reform led to a more transparent organisation in terms of internal and external services.

A reorganisation of the whole university was made in mid-1986. It led to the reestablishment of the departments, and the district libraries situated in House A and B as well as the main library went by the name Campus Valla. The term district library was eradicated, and the library in House B was from then on called TekNat, and the main library went by HumSam. It also introduced a new financing model, where the faculties now were supposed to pay for their library services (Igelström & Brage, 2018). It is possible that this was a way to stabilise the economy after LIBRIS had become liable of charge.

The primary user of libraries had historically been the researcher, but throughout the 1970's and 1980's a shift in userbase can be distinguished. The increase of students enrolled at the university, and the idea of studying being similar to a job, brought a need of study spaces outside the students' home. Simultaneously, the researchers' need for the physical library decreased due to the introduction of digitised periodicals. This tendency has with further digitisation only amplified the researchers' absence from the research library (Igelström & Brage, 2018).

Expansion

The need for spatial changes at the main library were caused by an increased number of students and a growing collection. Following the idea of the change of paradigm with the arrival of digital sources of information, the library went from being centered around storing books, to storing possibilities to learn (Bennett, 2009). In 1998, the construction of the extension started, followed by renovations of the already existing facilities (Figure 6,7, and 8). Fredrik Bernhardt was assigned the role of responsible architect for the project (Bernhardt, 2018). He was the owner of a local firm usually focused on private housing, but this project formed an exception. The extension was built in a similar style as the existing building, but with subtle postmodern features such as the arches seen in the façade and on the fourth floor (Bernhardt, 2018). With the extension came a new entrance facing the Corso, but still the entrance did not lead directly into the library, but to a common entrance hall with a seating area. The entrance to the library was however strongly accentuated with glazed walls.

Regarding the spatial additions, the mezzanine was extended and a fourth floor was added. Within the area for books, reading desks were placed and search stations were later added. A quiet reading room was added to the entrance floor, as well as a lecture room by the old entrance. On the third floor four group rooms were added and all fiction was peripherally placed in the hall on the fourth floor (K. Eriksson, interview, March 3, 2020). Igelström and Brage (2018) tell that during this time, a considerable part of

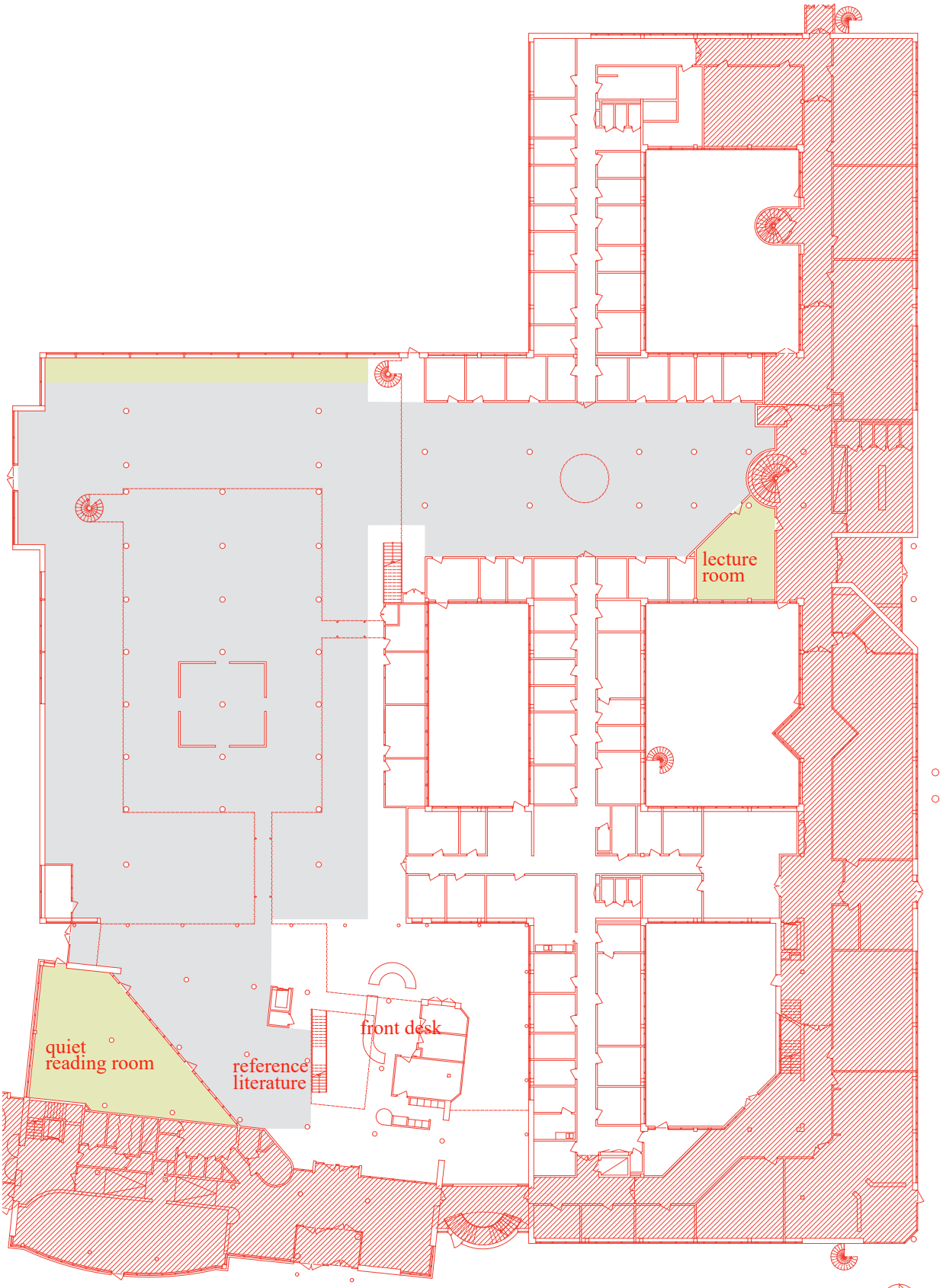

Figure 6. Floor 2, Linköping University Library, 1998, 1:500.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

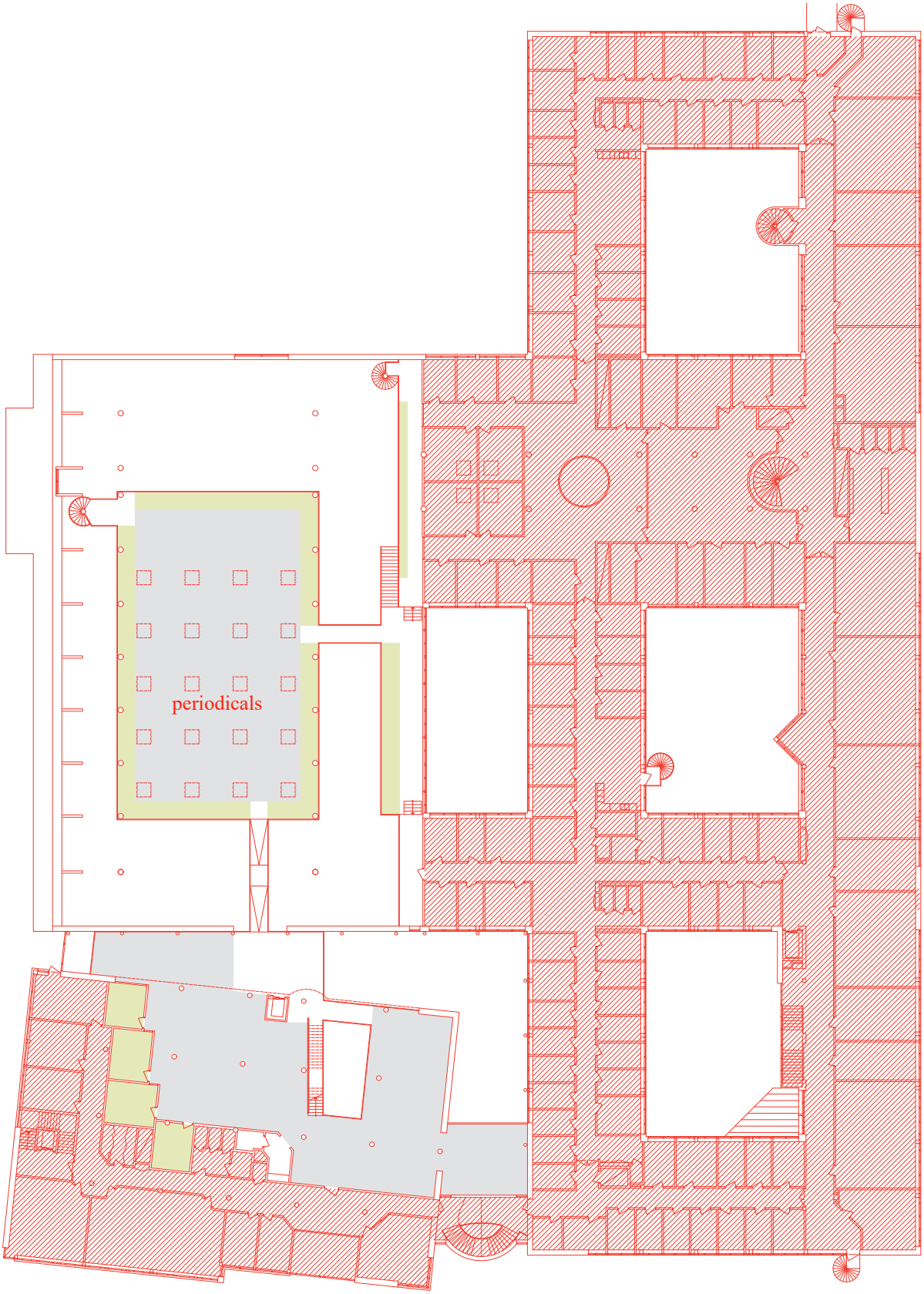

Figure 7. Floor 3, Linköping University Library, 1998, 1:500.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

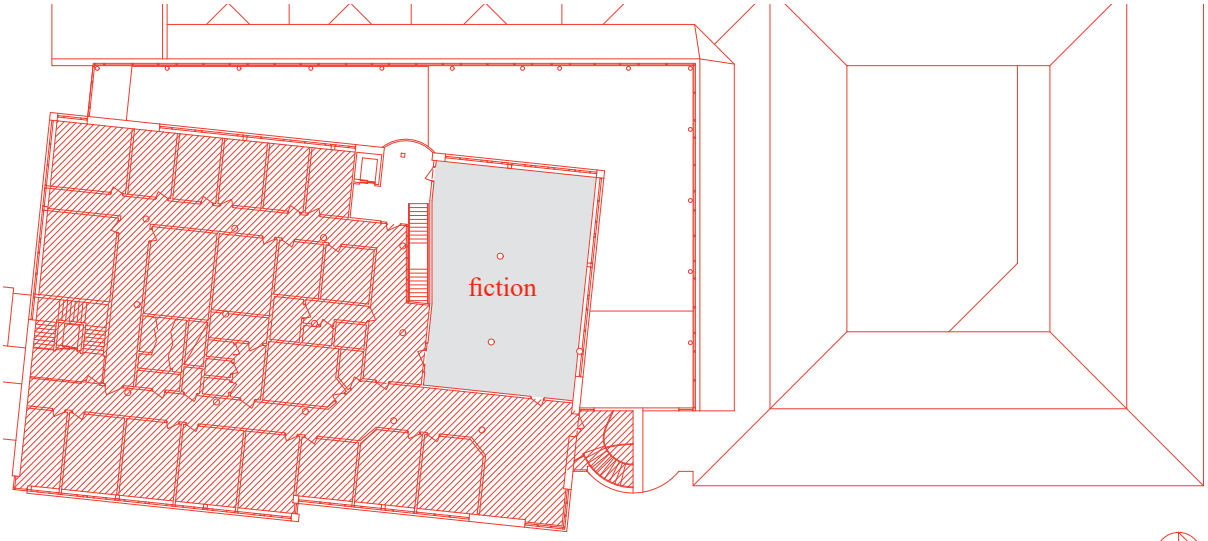

Figure 8. Floor 4, Linköping University Library, 1998, 1:500.

the collection was moved to storage, but due to the fact that several district libraries simultaneously were swallowed up by the central library as an effect of economical savings, the full collection became much larger. The merging of the district libraries had been a perennial issue since the 1980's and it took until 2014 for the last standing branch, TekNat, to become part of the central library. A critical financial situation motivated the decision as well. This merge brought with it the end of the Linköping model. (2018)

Digitalisation and Adaptations

During the 1990's, a shift in the dissemination of information began with the arrival of the Internet, and a period of adaptation awaited. At the main library, an Internet team was formed in 1994 to inform about the possibilities of the Internet and its uses, Igelström and Brage (2018) write. In 1996, the university started an electronic publisher, Linköping University Electronic Press, which became part of the library organisation later. Regarding self-services, there was a slow start because of high levels of stolen material. It was however solved with improved theft protection; electronic article surveillance detectors was installed at the main library and books were bar-coded.

The media expenses comprised 14 % of the total budget in 2001 and in ten years, that number had risen to 76 %. This required for the organisation to adapt. For example, the collections went through a major upgrade. In 2006, the books were equipped with a RFID-chip which made self-service easier. The SAB system was replaced by the Dewey Decimal Classification, and in combination with the UniSearch system and the local catalogue, this resulted in a system where every book could be localised digitally. In turn, a system for floating collections could be introduced, where books did not have an assigned place but could be returned at any of the libraries. This diminished transports remarkably (Igelström & Brage, 2018). In contrast to this evolvement, the library tested a system with an open search function, without any predetermined filters. This led to an untenable amount of interlibrary loans, and the predetermined filters were soon reintroduced (K. Eriksson, interview, February 3, 2020). Another change which concerned the collections was the introduction of discovery systems.

With the normalisation of Google as the main search engine, the library's databases worked in a different way, but the discovery system gave a similar experience when searching. User experience, UX, had become more important in general, and aligns with the general increased student influence. An indirect impact was the introduction of bibliometric methods for evaluation and measuring of published material done in 2008, which made plagiarism easier to control. The library worked proactively with education and support in managing references, with the main goal to raise quality of students' work (2018).

The students had expressed a need for more study places and adjustments were made to meet the these in 2017 through reorganisations of the collection (Linköping University, 2018). For example, the fourth floor was completely emptied of the collection to instead contain study places. Conclusively, the learning-centered paradigm was progressively established at Linköping University Library, but a total, physical manifestation had not yet been realised.

4.2 Actual Spaces

As the conclusive guidelines for the theoretical background are reached (see p. 15), one might find it contradictory to initially do a descriptive, spatial analysis of the plans as two-dimensional subjects. However, the result of the architects' practical work is two and three dimensional until it is built, and therefore the plans will be the point of departure. Other dimensions will be highlighted later, as local information only can be found in a physical building. The focus will be directed towards Studenthuset which is where the analysis takes off, since this is the only space possible to visit at this moment in time. The preceding states of Linköping University Library are described in the previous chapter solely through the two-dimensional surface of the plans, and their actual state will be compared to the present building in terms of added and lost functions. The actuality is here used to describe what *is* and can be seen when looking at the two-dimensional plans, but additional essential information gathered during site visits and facts provided during the interviews are included for a more in-depth depiction.

Regarding the building itself, it was presented to be planned by White Arkitekter in 2015 (Linköping University, 2015a), and inaugurated just in time for the fall semester to start in 2019. It is placed in the southern part of campus Valla, on the east side of the Corso (Figure 3).

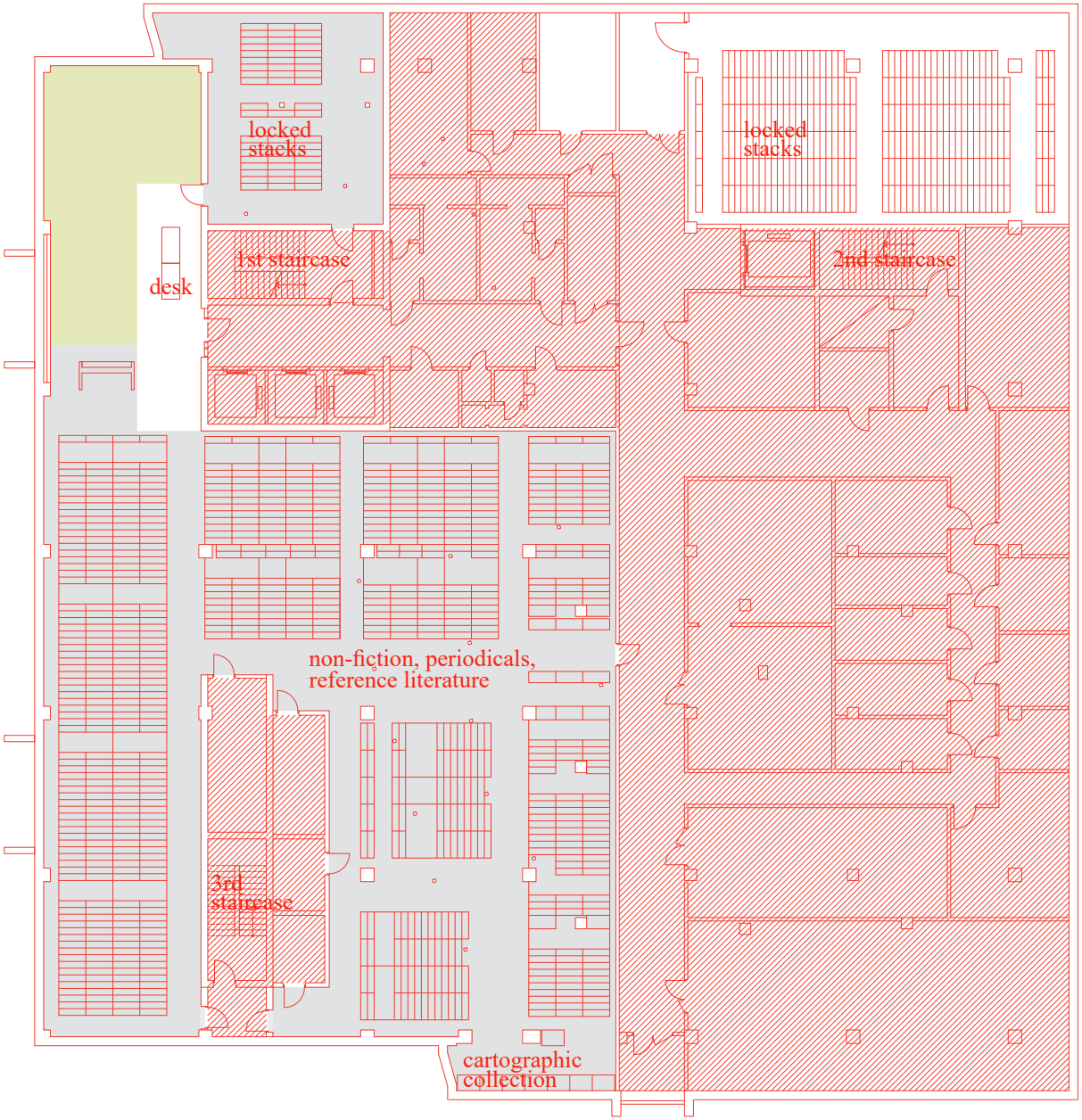

Figure 9. Floor 1, Studenthuset, 2019, 1:300. Adapted with permission.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

Floor 1

In the basement, the construction system can be distinguished through the primary pillars placed with a distance of 7,2 meters in both directions (Figure 9). On this floor they are the hardest to differentiate from the supportive pillars carrying loads from the above floor. There are three staircases running through the whole elevation. The first, at the top left, is the main staircase also holding three elevators. The second, to the right, is clustered with the service elevator which are used to transport material and it is the only elevator big enough to carry a stretcher in case of emergency. The third staircase, located below the first, is only for emergency. The latter two centralise technical shafts. In the basement, about half of the space is dedicated to other technical spaces, storage rooms and a recycling room. There are changing rooms for staff, and then there is the library space.

The main library hall on this floor is reached through the public staircase and elevators, but the room itself seems to be guarded both by electronic article surveillance detectors placed by the door, and by the two librarians at the desk next to the entrance. The room holds the most used non-fiction, periodicals, and cartographic material, while the remaining part of the non-fictional collection is held by a repository placed just outside the campus. The room is rough; no refined surface materials are to be found, the collection is held by archive shelves and there is no daylight. There are reading places, but they are few and clearly not made to be used for a longer period of time. In addition, there is a closed archive room and to the top right a closed repository for the library's administration. The high security signals to the visitor that this is an important space, but not a space to stay within. It seems as if the visitor is not supposed to browse here, they should know what they are looking for, borrow it and leave to another floor.

When comparing the functions of this floor to the placement of equal functions in the earlier floorplans of the library, there is an inversion of priority. The storage of the collection took up almost all of the space in the earlier floorplans, while it in this plan clearly shows how the collection is pushed out of the main halls found higher up in the building.

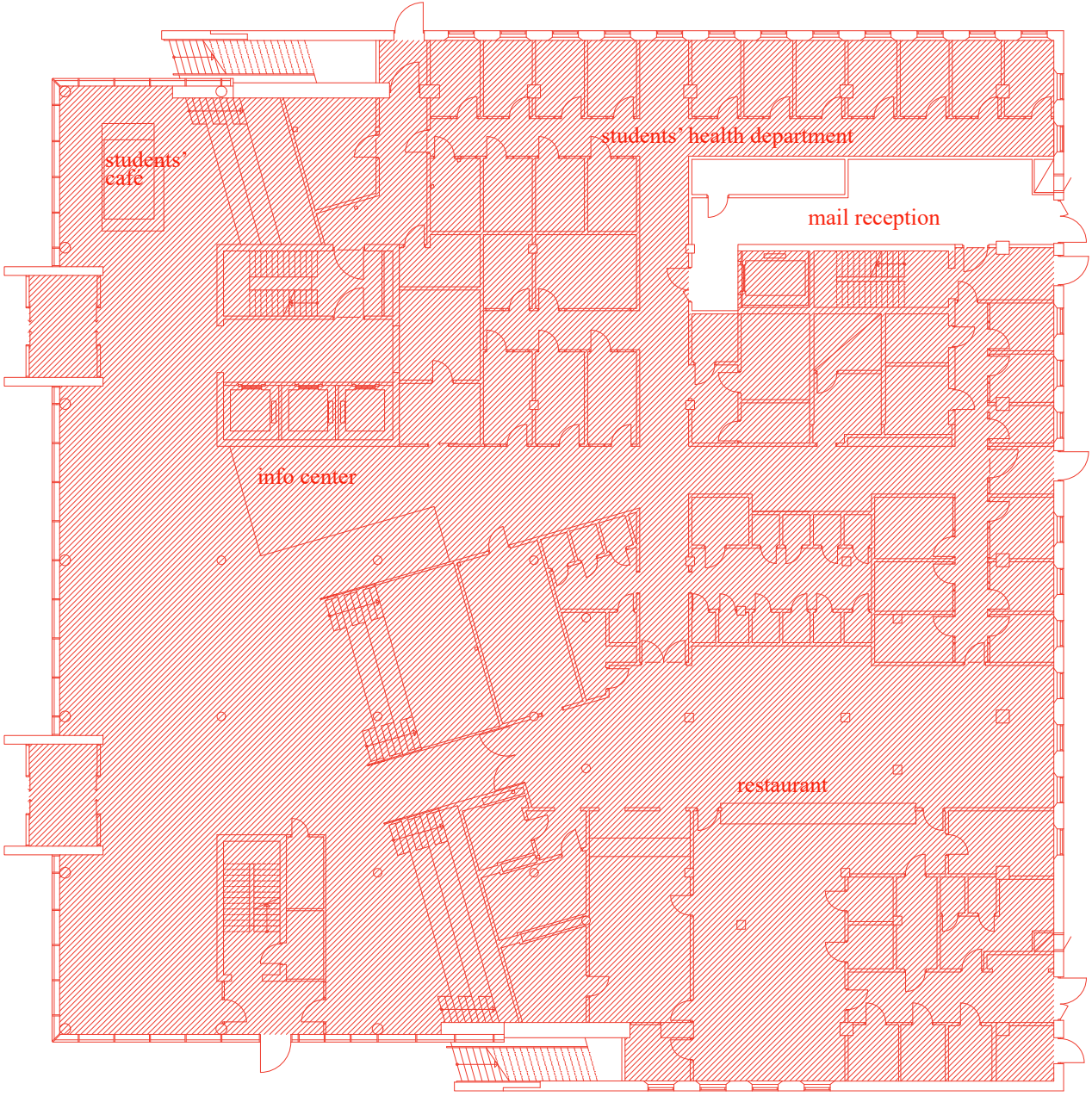

Figure 10. Floor 2, Studenthuset, 2019, 1:300. Adapted with permission.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

Floor 2

Almost none of the spaces on the second floor belong to the library, except the mail reception (Figure 10). Instead, it consists of the common info center, the students' café, a restaurant, and spaces for the students' health department. Similar to the layout of 1998, the entrances face the Corso, and the library is in relation to them placed deeper inside the building. To a great extent, the public space on this floor is flexible, which is needed since neither the restaurant nor the café have assigned seating areas. The visitors choosing to use the commercial functions are thereby forced to also use the public spaces. It remains to be seen whether it is successful or not to combine functions in this way.

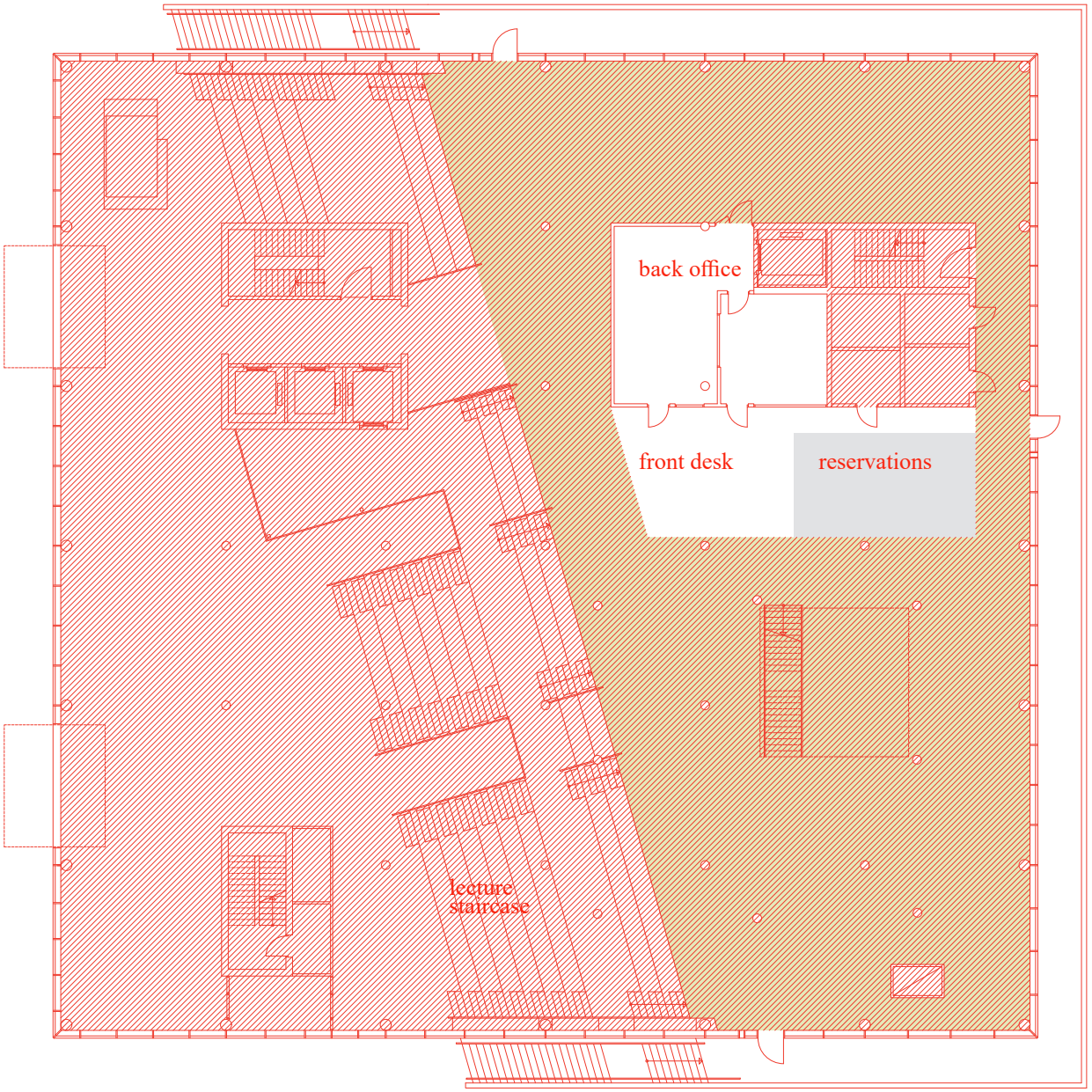

Figure 11. Floor 3, Studenthuset, 2019, 1:300. Adapted with permission.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

Floor 3

It is difficult to distinguish where the library begins and the public spaces ends in Studenthuset, while the borders of the earlier floorplans was very well-defined (Figure 11). Above the social staircase (which partially holds the possibility to give open lectures) the front desk is centrally placed. The front desk is smaller than in the floorplans from 1998, but the office behind it remains. Next to it, there are shelves for reserved material. An increase of reserved material can be seen throughout the past decade (K. Eriksson, interview, March 3, 2020), and the area has grown in comparison to earlier floorplans. The spaces surrounding the back office and the front desk of the library are study places with multiple seating options, and the east half of the building is surrounded by an elevated, roofed terrace.

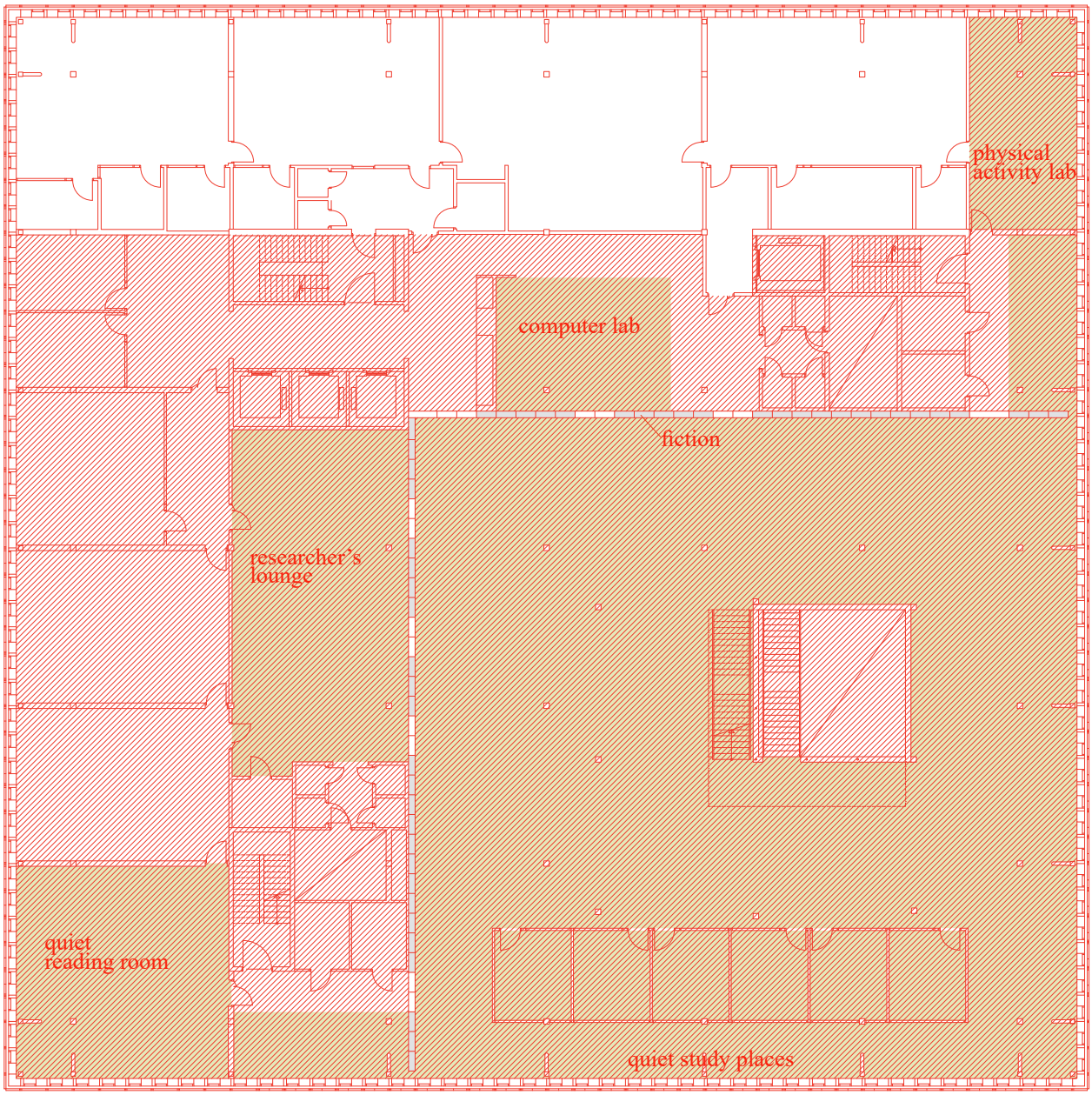

Figure 12. Floor 4, Studenthuset, 2019, 1:300. Adapted with permission.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

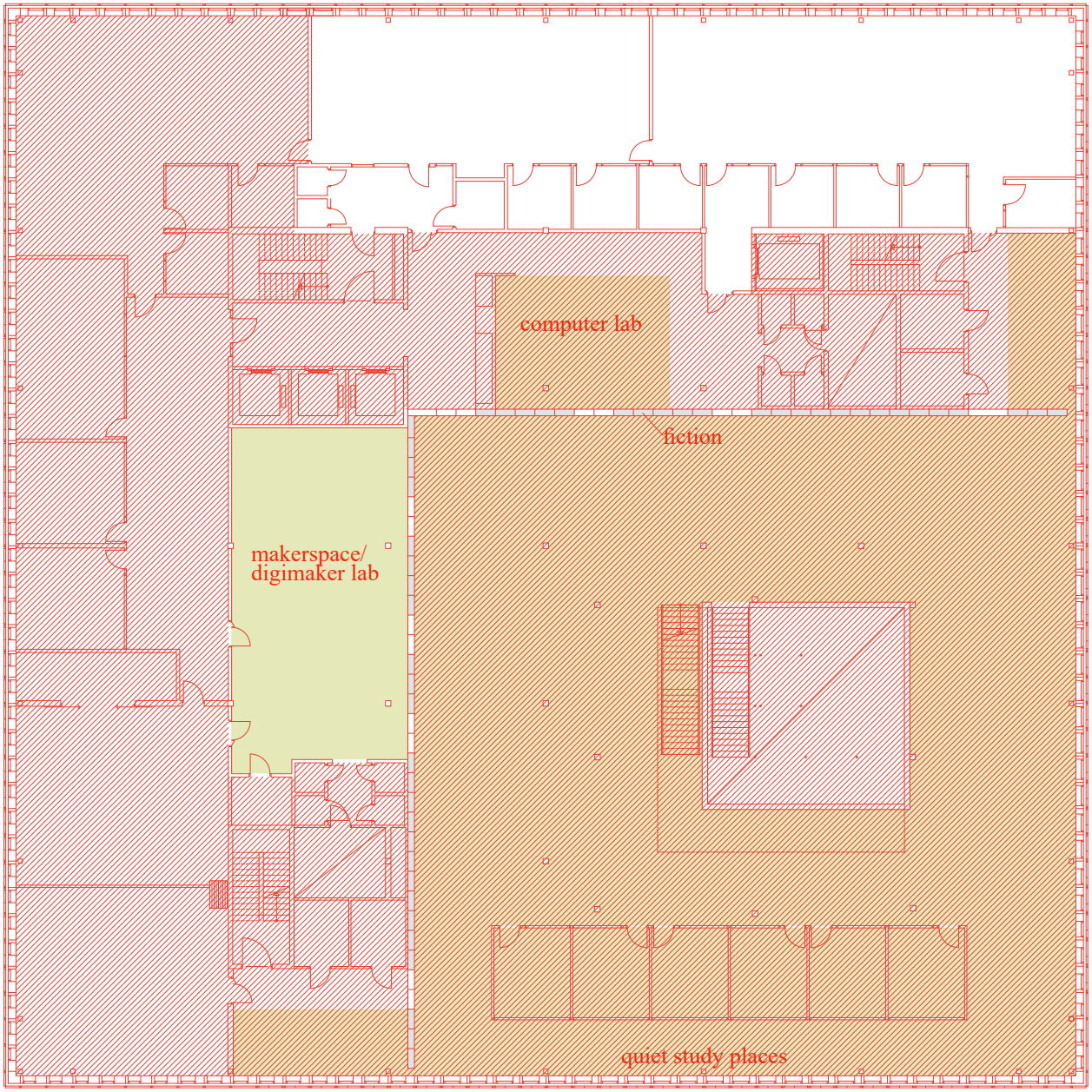

Figure 13. Floor 5, Studenthuset, 2019, 1:300. Adapted with permission.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

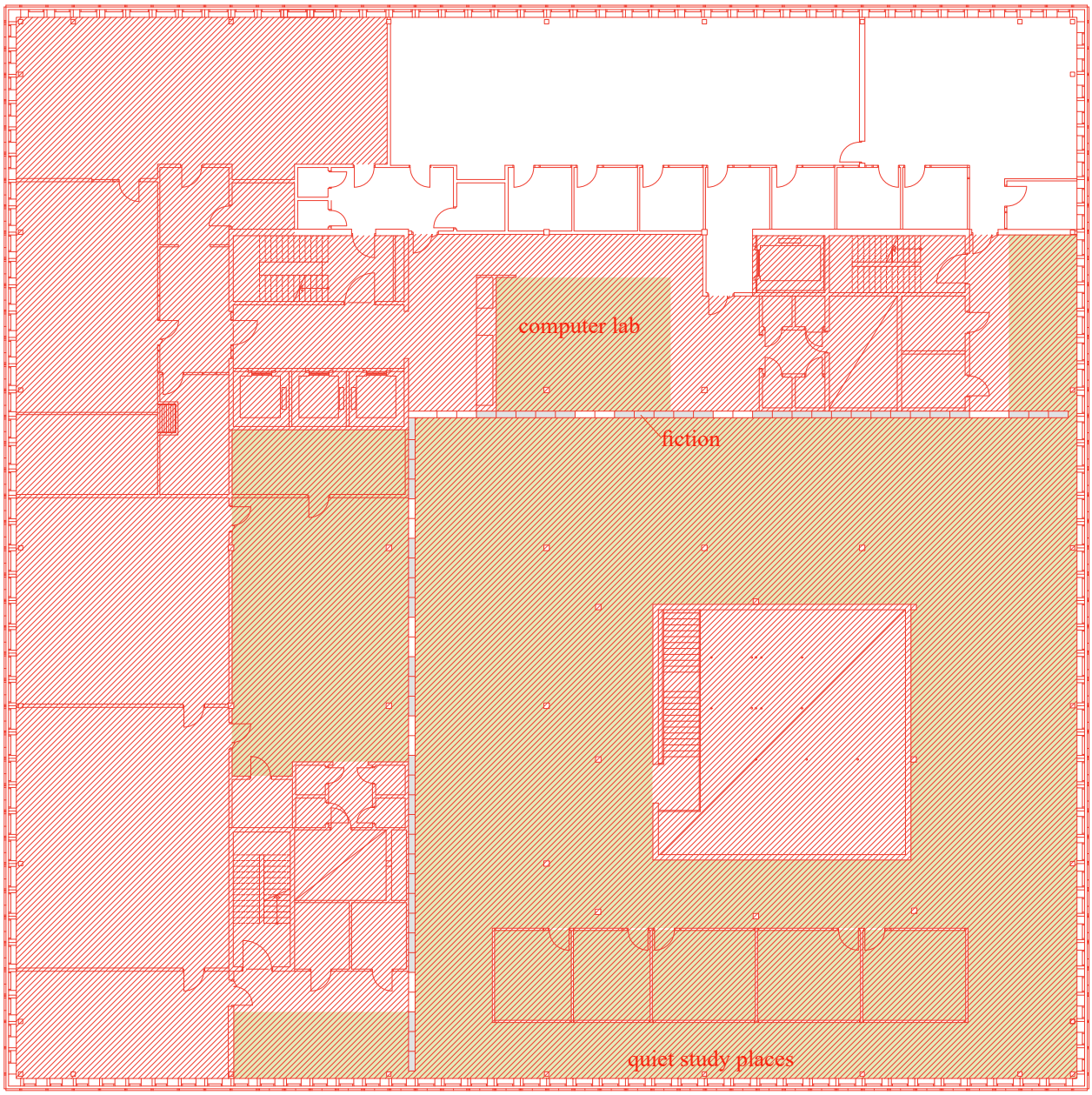

Figure 14. Floor 6, Studenthuset, 2019, 1:300. Adapted with permission.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

Floor 4, 5 and 6

The structure of the layout of the fourth, fifth and sixth floor is quite consistent (Figure 12, 13, and 14). Generally speaking, the administrative functions are arranged along the west façade, the librarian's office spaces are placed along the north façade, and in southeast the public spaces are arranged around a light shaft. The floorplans are similar, but not equal in terms of functions placed between the administrative spaces and the study space. When comparing the earlier set of functions incorporated in the library to the functions now inscribed, it is evident that the library has been clustered with not one, but multiple activities to complement the demands the collection put on the space earlier. Seen to the earlier floorplans, the functions that were added during the renovation 1998 were of the kind that made alternative learning methods possible. If the original way of learning was through reading – through literature – there were then group rooms and a lecture room added. Printing and copying rooms were added as well. The quiet reading room indicates that a need for a fully quiet space had emerged, and one can assume that the main hall was not as quiet as it had been before. In Studenthuset, the functions closely connected to the library are of a wider range. There are computer labs, a makerspace/digimaker lab, a researcher's lounge, workshop spaces, a lab for physical activity, a quiet reading room, and seventeen group rooms. Even though all of these functions are now clustered with the library, the spatial structure make them remain secondary to the study places.

The light shaft stretches through all three floors, and around it the study places are arranged with multiple seating options, depending on if the visitors are there to work alone or in a group. Along the south façade there are single study places that are supposed to be quiet. The spaces are made to hold many people at the same time, and so far, it seems to be a popular space among students. "On a normal day, every study place is taken", Eriksson said in the second interview (March 3, 2020). It entails loud noises, and the initial idea was for the study places to get quieter the higher one would go in the building (K. Eriksson, interview, March 3, 2020), but since the volume of the light shaft increases with the floors, the sound from below travels upwards. Surrounding the study spaces there are ceiling high bookshelves forming a wall towards other functions. In these, the library's collection of fiction is placed.

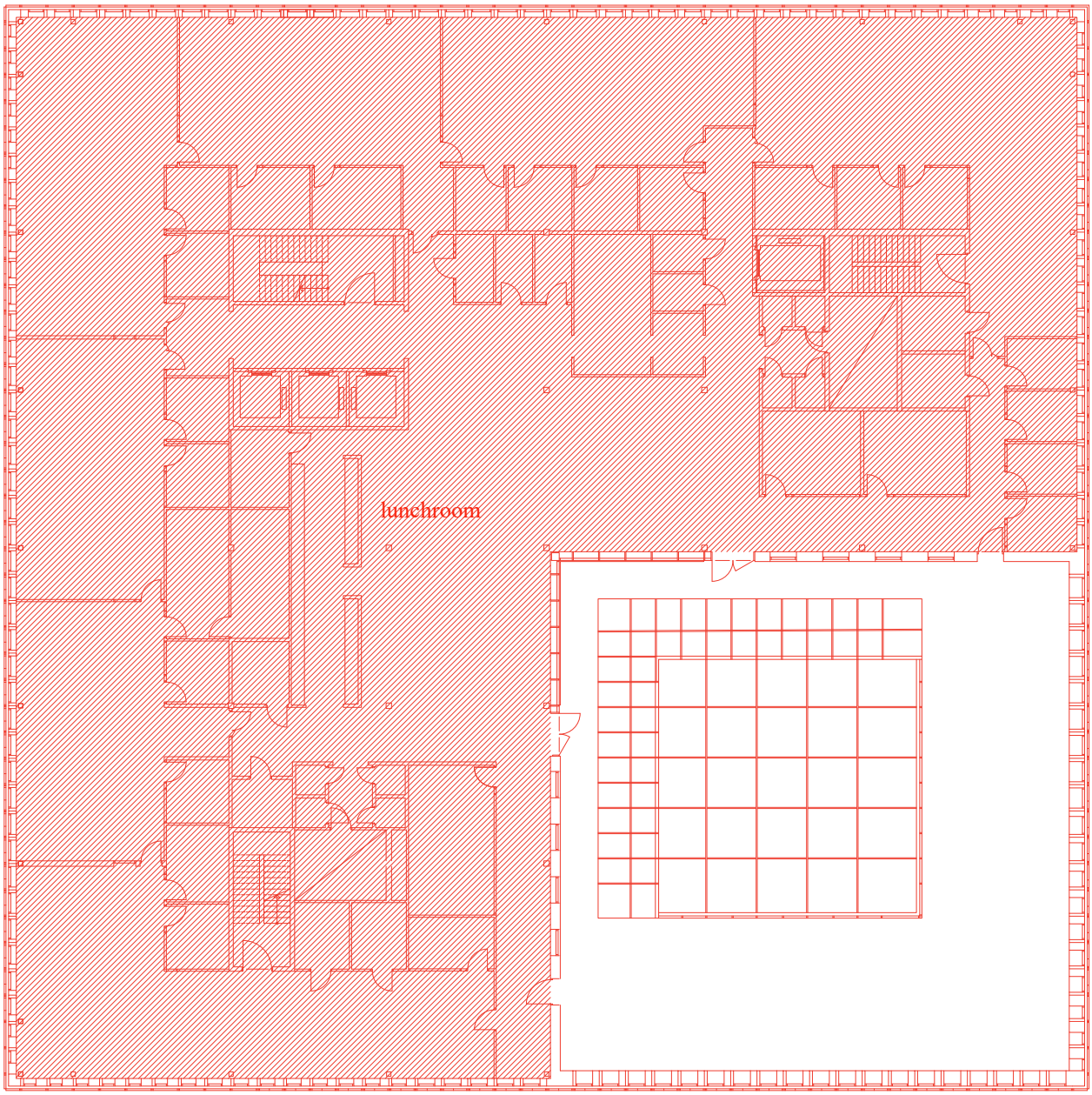

Figure 15. Floor 7, Studenthuset, 2019, 1:300. Adapted with permission.

Study places

Collection

Office units (and public passages)

Spaces not belonging to the library

Floor 7

There are no spaces exclusively assigned the library on the top floor, but a common lunchroom for all of the employees working in the building (Figure 15). In addition, there is a roof terrace extending the lunchroom during warmer days. Some administrative functions are located here, and there are shared meeting rooms for the staff to use. In comparison to the floorplans of 1998, this is an upgrade from the lunchrooms incorporated within the office area.

5. Analysis

The analysis of the selected study object and the general idea of academic library unfolds in four major parts. The first concerns the term concept, and functions as a background for the rest of the analysis. In the second part, the linear chain of events is constructed, followed by a search through the motives for building Studenthuset. The third section presents time and local information through a discussion on the learning-centered paradigm shift and the consequences of building during change, respectively. Lastly, a turn back to the chain of events is done and a speculative discussion on alternative developments finalises the chapter.

5.1 The Concepts

One of the main themes of this master's thesis is the early phase's impact on the outcome within architectural projects. During the early phase, a concept is created and established for decisions to be grounded in, and for later phases to develop into something buildable. But, as mentioned in the second chapter (see pp. 11-13), the concept belongs to philosophers, not architects. Of course, there is a major difference (pointed out by Nilsson (2002) on page 215 in *The Construction of Realities: Gilles Deleuze, Thinking and Architecture*), but when words have plural meanings, clarity is of great importance to avoid confusion. This part of the analysis aims to discuss the difference and similarities of the philosophical concept and the architectural counterpart, as well as finding what architecture might have to exert from the meaning philosophy alludes to. In turn, it aims to justify later parts of the analysis where philosophical concepts are borrowed and combined to recognise the changes Linköping University Library has been through during the learning-centered paradigm shift, and to give a deeper understanding for the architectural concept put forth within the study object and how it was translated into actuality.

Philosophical Concepts and Architectural Concepts

Already in the introduction to *What is Philosophy?* (1994), Deleuze and Guattari are stating that "[p]hilosophy is the discipline that involves creating concepts" (p. 5). It becomes even clearer in the chart (Figure 1); philosophy is the discipline owning the concept, while the other disciplines have their counterparts. They are, as mentioned, "equally creative, but only philosophy creates concepts in a strict sense" (1994, p. 5). The safeguarding of the concept is further demonstrated when they point out that the philosophical concept has rivals which throughout history has tried to claim the concept as their own. The latest rival is the contemporary fields of computer science, marketing, design, advertising, and communication, where the commercial understanding of the term apprehends a shallower understanding, only aiming at the pure idea. That idea must within these fields be a marketable commodity which the strictness of the philosophical concept dismisses. The architectural concept is a narrower definition of a design concept, which indirectly means that architecture is a thieving field, but there are arguments that justifies the stealing.

The most obvious motive is that architecture is a nomadic art, which is dependent on other disciplines and fields. Architecture generates ground rules for mundane life, and in order to accomplish these both input and comprehension from concerned actors are needed. This factor makes architecture inevitably collaborating and in the prolonged dependent on being interdisciplinary. In this sense, architects are rather appropriators than thieves. The notion of being an appropriator, or borrower, of a task belonging to another discipline is discussed by Randall Teal and Stephen Loo in the article *A Pedagogy of the Concept: Rereading an Architectural Convention through the Philosophy of Deleuze and Guattari* (2018). They mean that the concept is as "an instrument for thinking, making and communicating" (2018, p. 212), which applies to both definitions. There is however a risk of under- or overdoing it; when an architectural concept becomes banal, insipid, or vague, it is only contributing with aggravations. The architectural concept needs to be grounded enough to stabilise and "[t]his is why the link between language and concept formation is critical: ideas presented as explanations miss the fact that being persuasive depends, in part, on knowing what is at stake – that is, understanding the ground" (2018, p. 214). To have a well-grounded concept is a crucial factor in all architectural projects to avoid the concept becoming eviscerated.

To be able to deduce what the architectural concept can exert from the philosophical counterpart, a further elaboration on the latter is needed. Deleuze and Guattari (1994) means that the philosophical concept is made by a *chiffre.* A note on the French term is made in the Translators' Introduction since various translations are possible. They have used "combination" to frame the philosophical sense, but the common translations also include "figure", "numeral", and "secret code" (1994, p. ix). The translations imply that concepts consist of multiple factors, and that it by itself forms a fragmentary whole, totalising the combinations it consists of. The concept is at the same time the tool and the creation of philosophers, and it is constituting the aim to being part of a progression or expansion of thought in search for a truth. The concept would not exist without a foundational problem, which is something corresponding to architecture as well. Without a problem or the need, an architectural concept has no reason for being created. A differentiation can now be identified because when the architectural concept aims to fill physical needs, the philosophical concept strives to solve problems through establishing understanding.

The architectural concept is by Teal and Loo (2012) explained as "the generative idea of a project articulated, as a whole, in discursive language and used as a point of verification or validation as the design progresses" (p. 212). This is later problematised since the notion of the architectural concept also entails generalisation and simplification. As stated, the concept is regardless its definite form simultaneously a fragmentised whole which indicates certain complexity (Deleuze & Guattari, 1994). In the same way as an architectural concept needs to be concisely explained and well-grounded to prevent it from being vague, it must take additional, fine-tuned layers into consideration upon the established foundation.

To give a deeper understanding for the architectural concept put

forth within the study object, Studenthuset, and how it was translated into actuality, Deleuze and Guattari (1994) makes four main statements regarding the philosophical concept. How these correspond to the architectural concept is expanded upon below.

"First, every concept relates back to other concepts, not only in history but in its becoming or its present connections." (1994, p. 19) Concepts are always connected to a problem and every concept has a history. They evolve from other concepts, no matter how detached a thought might seem (Deleuze & Guattari, 1994), and context is one of the main pillars within architecture. A historical context will always be present and whatever the intention might be, a standpoint must be argued for in all cases. Regarding becoming and present connections, it is self-evident that the surroundings must be taken into consideration. If one hypothetically assumes that architecture was to be created in a place without surroundings or history, the connections would rather be to the creator and their appropriated references. The architect's relationally, referentially, and contextually obtained knowledge is individual and inescapable.

"Second, what is distinctive about the concept is that it renders components inseparable within itself." (1994, p. 19) The concept would not be the concept if it did not consist of the invariant set of fragments it consists of. If a philosophical concept were built on other ideas, it would not be this exact concept and if a part were changed, the understanding would be different. Therefore, the inseparability of (the multiple) components in the finished concept is determined by itself. Both concepts work parallel to its solution or understanding, and an (intelligibly spatial) interdependence is exemplifying it with the proclamation "[t]here is an area *ab* that belongs to both *a* and *b*, where *a* and *b* 'become' indiscernible" (1994, p. 19). The interdependence is necessary within the concept, but the concept is also contextually interlinked with other concepts through its exoconsistency. This correspond to the architectural concept as well, in the sense that architectural concepts co-exist as translations into buildings, and in the architect's mind. Through the spatial metaphor "zones and bridges are joints of the concept" (1994, p. 20), Deleuze and Guattari make a final explanation of how the concept operates on the plane of immanence.

"Third, each concept will therefore be considered as the point of coincidence, condensation, or accumulation of its own components." (1994, p. 20) When separating the components of the philosophical concept, they all have an intensive ordinate, which is what makes them singularities. They are not general but rather generalised, not particular but particularised. Comparing it to science's functions, where variables and constants are present, the philosophical concept's components are *variations* relating to other concepts by its exoconsistency. In *Difference and Repetition* (1994) Deleuze refers to Aristotle's ideas on difference in identities, where neither difference nor the concept lie within the genre or species, but in the individual. This implies that the philosophical concept is recurring in all components. In architecture, the concept is formed in an early phase, but how it transfers into a physical result differs. As we know by now, the philosophical concept does not seek results. The philosophical

concept concerns the occurrence, the state of things, and not the thing itself (Deleuze & Guattari, 1994, p. 21). In architecture this is true as well: the concept concerns becoming and it affects the result, but the result is not the concept, only the beginning. The philosophical concept concerns state, becoming, and it is handed over to future philosophers, while the concept within architecture is handed over into another phase, where it in extension translates into a building.

Both concepts possess the ability to be modified to some extent. An example is brought up by Deleuze and Guattari, where they state that philosophers are the ones which are able to correct or change their ideas according to what suits them. It is humble and flexible, and "posits itself and its object at the same time as it is created" (1994, p. 22). Both the architect and the philosopher can pick up an old concept and rearrange it, depending on what suits the current event, site, or time.

"Finally, the concept is not discursive, and philosophy is not a discursive formation, because it does not link propositions together." (1994, p. 22) The proposition in architecture is relationally referring to the concept, and through the concept to context and the knowledge of the architect, as stated earlier. The proposition is iteratively recreated until a final decision is made, and then it transfers into the reality.

The separation of the philosophical concept and the proposition is far more difficult, but of similar importance. When confusing the philosophical concept with the proposition, a scientific concept is produced, and science's designated task is to create functions, and authenticity in the proposal is thereby falsely stated. The philosophical concept slips between these false statements, and it is crucial to distinguish them from the true concept. The discursiveness depends on the "inseparability of variations" in the philosophical concept, and concepts rather resonate than cohere with each other. The philosophical concept is not linear, not a piece of a puzzle – it stands by itself as a fragmentary totality. The above-mentioned bridges are separate, moveable objects and they do not constitute a discursive whole. Therefore, the eventual discourse is insignificant (Deleuze & Guattari, 1994). This accords to the architectural concept as well, but it differentiates through the fact that it could consist of discursive components. This is the virtue of the freedom architects has proclaimed, which comes through their ability to appropriate.

The distinction between the concepts are clear. The architectural concept appears through need and aims to seek solutions, while philosophical concept appears through will (or a search for truths) and aims to understand. They are not the same and should not get mixed up. But when having acknowledged that the concept in its philosophical sense belongs to philosophers, and that they are the only creators, architects can make use of their prominent ability to borrow. To create an architectural concept and allowing it to be created in the same sense as its philosophical respective, is a way to push architectural thinking in any direction. The strict belonging can also be appropriated by the architect. To create philosophical concepts primarily benefits innovative architectural thinking but in the prolonged, research affects the built reality. The architect can gain a temporary or

permanent secondary title, becoming a philosopher, which suddenly justifies the creation of concepts.

In the context of this master's thesis, the study object does not make use of philosophical concepts, but an examination of it can be done with help from these. Neither reinvention nor creation are done in the philosopher's strict sense, instead existing philosophical concepts are merged into a whole, which becomes something new in its totality.

5.2 Real Virtualities

Change is another theme of this master's thesis, and Studenthuset forms the representative study object. The motives for change, as well as the goals formulated for the project, can be traced back to the conceptual phase of the project. This part aims to give an answer to how the learning-centered academic library is described during the early, conceptual phase of the planning process through the concepts presented in the theoretical background (see pp. 13-15).

The Linear Chain of Events

The concepts put forth by Deleuze (1991, 1994) have already been explained in the theoretical background, but not yet while interlinked. Here, they will for the first time be arranged so that they form a linear chain of events (Figure 16), and a walkthrough of the chain is appropriate to understand the concepts in their context.

First of all, are the extensive boundaries framing the situation where change is going to be established. Within these, there are an existing reality, which eventually is disrupted. The cause of disruption is the appearance of intensive zones, which affect reality, and in turn also the extensive boundaries. All alternatives proposed to stabilise the intensive zones are together a multiplicity of possibilities, and these are created with the attractor as a final goal. When one or more of the possibilities are transformed into reality, the advanced cancellation of difference can be understood as a becoming. Stability is reached and a new reality is formed. A repetition of this chain of events will eternally be recurring, and new realities will be reached.

The linear chain of events is general, and applicable to any change. It does not include a method, since methods differ, and the reason for intensive zones to appear differs between cases. To be able to understand Studenthuset through this chain of events, one can try to substitute the posts with the events of the planning process of Studenthuset, but soon it gets obvious that there is a lot of information missing. The only factors that so far are known

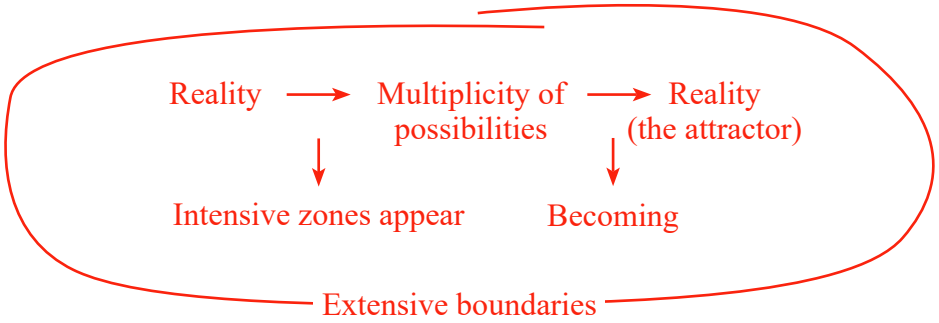

Figure 16. The linear chain of events.

are the two realities – the previous building and Studenthuset. In between these two states, an attractor had appeared, and before that, the intensive zones were evoked by something. A search for an attractor will the point of departure and along the way, the virtualities will hopefully appear as well. One way to find the aim is to examine the architectural concept, another is to turn to even older project directives. Both ways will be conducted, and the following paragraph starts out with the latter.

A Search for an Attractor

In the project directives given on March the 19th 2014, a multitude of visions and statements regarding the physical and social spaces of Studenthuset are put forth. As early as 2012, the overall vision of Linköping University was stated. It reads: "University with international luminosity – where people meet and evolve" (Linköping University, 2014, p. 1, author's translation), and it is with this vision in mind the principal of the university presented three especially important areas which together create the foundation for the future prominence the university is aiming for. The three areas were the quality of the educations, pedagogical forms, and the students' study environments. Naturally, it was with a background in the third statement Studenthuset was proposed. The new building was supposed to "support students' and staffs' collecting and exchange of information and knowledge, i.e. a concerted library of the future" (Linköping University, 2014, p. 1, author's translation). Alternative options were examined but not defined. The only possibility mentioned was an extension of the previous building on site, Origo, but due to different unspecified reasons a new building seems to have been the only option (2014). Looking back at the tendencies seen within higher education institutions during the 2010's (see p. 21) it is particularly two of them – innovation and internationalisation – that form the basis of the planning process of Studenthuset. The new building is in addition supposed to be a trademark for Linköping University, which in the long run should strengthen the competitiveness and identity in relation to other universities nationally and by implication also internationally (2014).

The architects have based their design on statements made in the project directives. They are picked up on in the program for the building (Linköping University et al., 2015a) as quotes, and with these as a foundation the architectural concept was formulated as a set of design strategies. The singled-out quotes ensure openness and reduction of distinct borders between functions, the importance of sustainability (which also should be visibly reflected everywhere in the building), adaptability over time, the impression the building should give, and new ways of storing books as integrated in the building. (Linköping University et al., 2015b) They read:

> "The new building shall be welcoming and express openness and transparency, to be a hub for the university's future library and student- and educational support- and service functions."

> "The entrance floor shall be fully public and mirror the teeming number of people a modern university consists of."

> “The fact that Linköping University actively works with sustainability and ranks high in sustainability among universities (top ten in the world, first place in Sweden) shall be reflected both in the exterior and the interior, and it shall reflect in energy consumption.”
>
> “The building shall give an airy and light impression, and at the same time be effective and adaptable.”
>
> “The library’s collection shall be stored in a way that makes it an integrated part of the building. There shall be no set boundaries between the public functions of the building, but the functions shall interact and complement each other.” (Linköping University, 2014; Linköping University et al., 2015a, author’s translations)

Additionally, there are multiple project directives given that the architects have not specifically mentioned as a foundation for the design principles, but in hindsight they were equally realised. For the library, this is captured in following quotes:

> “The building shall contain the future, modern library – a library where information is transformed into knowledge. A social arena for development and exchange of information. Today, a modern library is something completely different from the traditional library of quietness and books. To a great extent, a modern library contains exciting study spaces which gives everyone there a possibility to transform information into knowledge or experiences, which indeed is the quintessence of a library.”
>
> “The book shall be visible, but not on the behalf of precious space that could be optimised in a better way.” (Linköping University, 2014, p. 3, author’s translations)

To comment on the directives, all of them are to a great extent fulfilled. Regarding the storage of the books one might wonder where the idea of the archive shelves in the basement comes from. There they are not visible, not integrated. An answer is given in the in-depth planning directives dated the 25th of May 2015. Here, it is said that clarification is needed regarding what the space should be used for. The services of the library are tested against the study spaces. It is now clear that the study places do not belong to the library, but the two zones are meant to interact with each other. The proportions of space are specified in three bullet points, whereof the second states that the shelf meters not put on floor 3-6 should be contained on floor 1 in an open repository accessible to students, employees, and visitors (Linköping University, 2015b).

The in-depth planning directives changes the preconditions for the spatial arrangements of the library and clarifies the hierarchy of functions within the building. This is also highlighted in the fifth of the design strategies put forth in the program for the building (Linköping University et al., 2015a). The strategy concerns the zoning of floor 4-6, which each have their own

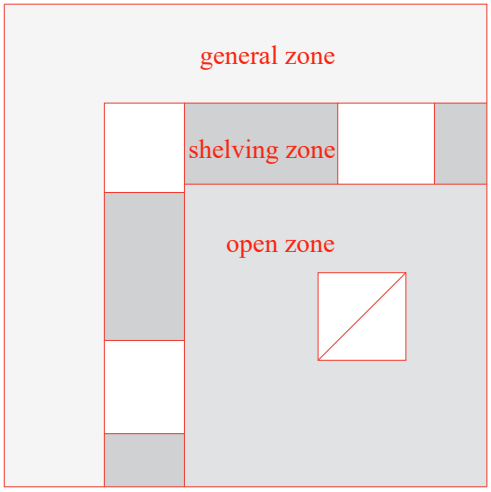

Figure 17. Conceptual zoning of floor 4-6 (Linköping University et al., 2015a). Adapted with permission.

specific characteristic, and aims to answer to the requirements on flexibility (Figure 17). The general zone is containing the supportive functions – administration, service, and lecture halls – which are easy to adapt to future needs, and the open zone holds an area that is adaptable in terms of refurnishing. Between these the shelving zone is situated, and it is supposed to swallow a great part of the collection. It is said to be the most static of the three zones (2015a), but in hindsight we know that none of the spaces in this zone contain books, except from the shelves creating the border between the said zones.

Application

When browsing through the directives it becomes clear that the attractor was to become “the future, modern library”. It is a phrasing coming back in multiple contexts, overarching other possible attractors such as being sustainable, adaptable, or social. None of them are as frequently mentioned, and they are rather characteristics of the future, modern library. The full definition of the attractor is to some extent specified. Except from being sustainable, adaptable, and social (which in general might be some of the most used terms when describing contemporary architectural projects), there are other specifications made. A future, modern library contains multiple options for study spaces; its books are integrated and visible but not interfering; it is certainly not a traditional library; it is a space where information is transforming into knowledge; it is a part of the hub of the university.

What defines the attractor seems to be the extensive boundaries, which by no means are only spatial. The extensive boundaries consist of a compilation of actors and interests: the organisation (the library and the university), the budget, the societal tendencies (political influences and the paradigms), and the architectural borders (outer and inner walls) (Figure 18). The possibilities are given in the project directives and are made up by all the mentioned features of Studenthuset. Many of the possibilities was realised, but some of them have not made it to the finished result, or only made it partially.

Becoming is of course the construction phase, but the intensive zones remains to be specified. They are the reason for the building to be erected in the first place, and the reason for the older building to not contain the

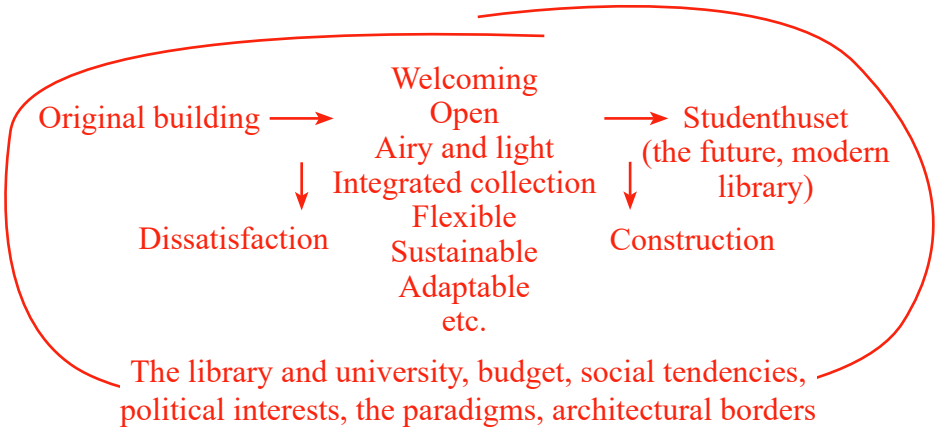

Figure 18. The linear chain of events.

library. This must have been ensured by early inquiries, because neither the project directives (2014) nor the program for the building (Linköping University et al., 2015a) are defining any specific reasons or alternatives. The only part implicating that there might have been alternatives is the short section saying that Origo has been examined, but not deemed suitable (2014). One can partially understand the mentioned features as antidotes of the intensive zones, meaning that the features were not contained within the earlier library building. However, one can also find a reason in the tendencies among higher education institutions during the 2010's, mentioned in relation to the background of the project directives. The university aims to be internationally luminous, and one of the easiest ways to be noticed when it comes to architecture, is to create a landmark. Now, this can be traced to the building program, where the architect in the seventh design strategy pictures a skyline of Linköping, and beneath it an elevation of Linköping University with Studenthuset in it (2015a) (Figure 19). A new space is thereby stated to be needed, and Studenthuset forms a solution (see p. 51). It is not primarily because the library is in urgent need of new facilities, but because of the branding of the university. The landmark is said to fill the need for centralised assistance and service functions, and the university library are contained within that group of functions.

Conclusively, the attractor is easier to recognise, but the intensities are the reason for the attractor to appear in the first place. Dissatisfaction is perhaps what usually is the reason for intensities to appear, but it is only partially true in the case of Studenthuset. The main reason is to be attractive and competitive among other higher education institutions. Linköping University wanted a landmark that is appealing on multiple levels; it has to make the university stand out internationally, nationally, and locally and the future, modern library becomes a selling point.

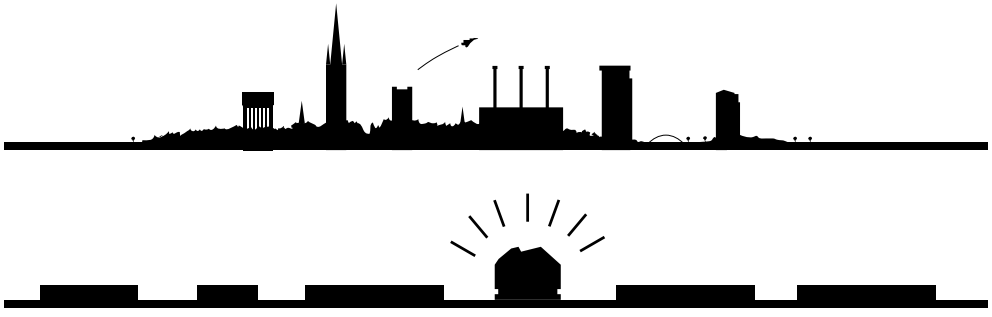

Figure 19. The landmark Studenthuset (Linköping University et al., 2015a). Reprinted with permission.

5.3 Present time and Future Intensities

The first guideline in the theoretical background stated that neither two nor three dimensions are needed when analysing a space. This has now been covered through the divergent background where the floorplans of Studenthuset were described, and in the previous section through a more in-depth search for the possible reasons for change, with support from the linear chain of events. The second guideline states that local information can be used, and that the multiplicity never needs a supplementary dimension. The prevalent stabilisation will sooner or later be interrupted by the reappearance of new intensive zones. In this chapter, the present, stabilised reality is used in search for the consequences of building during change, which all possess the ability to turn into reasons for future, intensive zones to appear.

Examination of the Learning-centered Paradigm Shift

The library is one of the frequently mentioned features of Studenthuset in the project directives (2014), but as mentioned, the library is in fact spatially modest while the public functions take up the most space. One could argue that this generality exists because of an ongoing identity crisis, a schism between two paradigms: between a digital and an analogue era, between serving the university and serving society, and between the book-centered paradigm and the learning-centered.

Bennett (2009) means that the learning-centered paradigm shift appeared as an idea in the early 1990's, and that it to some extent was realised by the turn of the millennium, but there are two aspects opposing the fact that the paradigm has fully arrived. Firstly, architecture is in addition to being a nomad filed, also a slow field. Whatever rapidity the world seems to hold, architecture will remain slow since architectural possibilities only are to be executed through renovations and new buildings. A spatial backlog is therefore inevitable. Generally speaking, higher education institutions are not known for rapidity either, which in theory should make architectural projects on university buildings unusually stiff. The learning-centered paradigm shift might as well have arrived, but it is not fully stabilised since it depends on a spatial manifestation. Secondly, digitisation and digitalisation has grown exponentially during the past decades. It is still ongoing which means that library organisations cannot possibly know how they will manage these questions in the future. To be unaware of what the future might hold is of course not a situation unique to the academic library, but it is significantly prominent in the case of the academic library. Since digitisation and digitalisation are some of the catalysts for the learning-centered paradigm, and these are not stabilised, the shift cannot be accomplished yet.

Conclusively, the shift is still ongoing and dependent on digital development. In reality it is not fully embodied but in the shared mind, it has already happened. One could argue that it will never be fully pushed through, since remains of older paradigms will cling on due to the slowness of architecture, but a stabilisation can appear on a regional or national plane, where the established idea correlate with reality in a constitutive

shared mind. As the learning-centered paradigm is still in the making, one could say that it is the common attractor for all libraries, which only can be reached through a spatial reframing.

Actual Consequences of Change

For a library to be planned and built during a paradigm, certain prerequisites are already established. For the book-centered paradigm, this implies that storage is the main function, and the spaces are built for storage. Big spaces, shelves lined up on both sides of main aisles, with the short ends facing it, holding the sign with classification codes for easy localisation. Reading spots are integrated but they are few. This becomes very clear in the case of the first floorplans for Linköping University Library (Figure 4 and 5), but it immediately becomes harder to recognise in the case of Studenthuset. Initially one could believe it to belong to the learning-centered paradigm, and it does contain some of its features, but as stated above, the learning-centered paradigm shift is still ongoing and to be planned and built during a paradigm shift brings certain extraordinary characteristics to the finished result. Below, five distinguished consequences are presented.

Firstly, the building permit drawings were approved in 2017, but the content differ from reality (Appendix A and Figure 12, 13, and 14). All spaces surrounding the main study areas on floor 4-6 (i.e. the rooms that today contain the digimaker lab, the researcher's lounge, the three computer labs and the lab for physical activity) where in the building permit drawings furnished for storage of the collection and named "bookshelf zone", except from the upper room of the physical activity lab which was a second quiet reading room. This is certainly a sign of the fact that the shift was ongoing during the planning process, but it also elucidates that the library shrunk noticeably during these years of planning. Out of the functions added, it is only the digimaker lab that officially belong to the library. This development brings the library closer into the future, but the functions clustered with the library, including the digimaker lab, are not unquestionable. Why should these be associated with the library? It might be a trick to reassure the stability of the library during the paradigm shift, when shrinkage is associable with libraries disappearing. So far it seems to work, but to take precautionary measures on something not threatened might prove to be unnecessary in the future.

Secondly, the public spaces of Studenthuset are multifunctional. The fact that the spaces are planned effectively and filling multiple purposes makes the question of economy vital. If the library only lease the office spaces on floor 4-6, the front desk area on floor 3, the open repository in the basement, the digimaker lab and the bookshelves on floor 4-6, their spaces have been minimised and taken a step towards being a future library. Public spaces are clustered with above-mentioned areas and in turn, it brings the question of whom they belong to the surface. To have all posts of the budget specified might appear as a foundational aspect when moving into a new building, but seen to the library's budget of 2020 (Linköping University, 2019), there still seems to be some uncertainties regarding public space. The post Facility Costs states that a saving of 3,7 million SEK has been made, and

this indicates that the spaces of the library have gotten smaller. It is further specified that there is an ongoing discussion regarding the distribution of costs, which has not been solved (2019). Which department it is that should be held accountable for the public spaces are not specified, but it is an important question to have in mind when creating public spaces, to avoid such uncertainties.

Except from being a question of economical responsibility, the vagueness of the public spaces becomes a topic relevant to students, employees, and future architects. The borders between the building's functions are hard to examine as someone not visiting regularly, but as an architect, the structural flexibility demonstrated in the placement of windows and pillars are easy to accept. The building is resilient in terms of usage, which the few actual changes made between the building permit drawings on floor 4-6 and the final result is a proof of. The uncertainties of the functions are however a prominent time stamp; the building is created in a time of uncertainty of the future, and this could also be a reason for the public space's multi-purpose function on the entrance floor. Seen to the architectural flexibility, the building strives to become rather than to be, and this is in this context its most advantageous feature. A building planned and produced during a paradigm shift must be adaptable, and it may function as an assurance for future changes and tendencies.

Thirdly, both the building and its functions goes by the name Studenthuset. This becomes interesting in relation to the library. Once, the name HumSam was deeply rooted – it was a name connected to its content. Today, Studenthuset is the name the building goes by and the library seems to have been absorbed by this name. It becomes yet another proof of the library being timid and indecisive about their role in the learning-centered paradigm, and that the paradigm shift have not had time to stabilise yet. It might be to the library's advantage to become a part of a larger whole, but with a stronger identity it would not be needed.

Fourthly, the question of decentralisation remains relevant throughout all decades of the modern history of Swedish higher education institutions (see pp. 18-21). The academic library is directly affected by this since it is acting beneath the institution. It is highly accurate to use the term decentralisation to describe the development on a national plane, but locally, centralisation and mergers have been one tendency for the past decade. In Studenthuset assistance and service functions are clustered within the same building, but the tendency can also be seen on a level affecting the programs of the education, where departments merge. Except from being a question of economy and effectivization, this concerns organisational power, priorities, and hierarchies within higher education institutions. However, centralisation of assistance and service functions is in the case of Studenthuset a gain for the students. The pre-study report for the project "En väg in" (Linköping University, 2017) concerns an eventual centralisation of administrative functions that affect students, and it shows that the physical receptions are distributed all over the campus and that the number of digital services is high. The centralised organisation is a development parallel to the planning and building of Studenthuset.

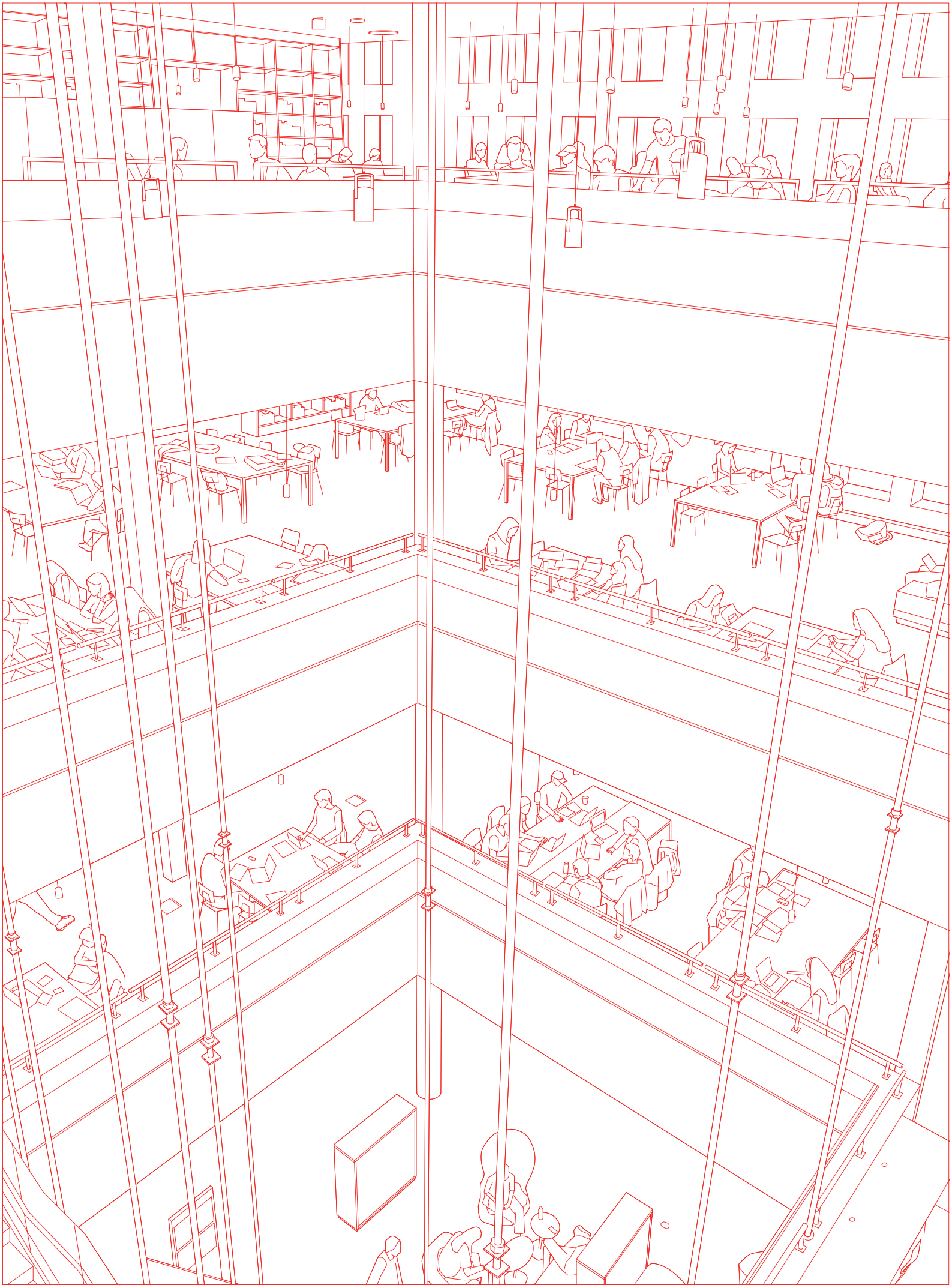

Figure 20. The light shaft. Adapted with permission.

Lastly, Studenthuset is immensely popular among students (Figure 20). This could be seen during the site visits done in December 2019 and March 2020 and it was further confirmed by Eriksson during the second interview (March 3, 2020). The reason for this can only be speculated upon, but a hint can be found in an UX-survey done by the library during autumn 2019 (Appendix B). It took place in the building through flyers and whiteboards, and students were to answer what they were doing in the building, from a pre-set list of alternatives. The intention with the survey was to function as a foundation for future developments of the library, but the result reinforce the observations done during the site visits. To visit the library comes in sixth place, after studying in different formations, having lunch or coffee, and to hang out. Other assistance and service functions are not mentioned in the survey but it gets clear that the spaces are used primarily for socialisation, and that the library is not the main attraction. The most popular reason for visiting the building is to study in groups, which partially explains the high use of the study places. A lack of other spaces to be in at the campus might also be an answer.

In line with the popularity of Studenthuset among students, the building was elected the winner of Building of the year, a prize announced yearly by the paper Byggindustrin (2020). The motivation mostly concerned the planning process and innovative solutions, but the outcome and popularity among students cannot have remained unseen in the process of choosing the winner.

Conclusively, history shows that the academic library is adaptable. Ultimately, the services libraries provide must be in line with their users' needs. During a paradigm shift, the uncertainties of the future are inscribed in the building. The noticeable reasons for intensive zones to appear in the future are equal to the more alarming consequences. Today they are manageable, but to a great extent they could have been avoided if the concept had been more consistently present, and if the attractor was formulated differently.

5.4 Unreal Virtualities and Future Virtual Space

The purpose of this master's thesis is to find what impacts the learning-centered paradigm shift have on the physical spaces of the academic library. The impacts will in this final part of the analysis be searched for with earlier conclusions and results as a foundation, but first an extension of the linear chain of events is required. This part uses the study object to arrive at an answer to the purpose, and a finalising discussion on the possibility of the academic library becoming fully digitalised ends the chapter.

Extending the Linear Chain of Events

When the dichotomy *the real – the possible* has been replaced with a narrower definition (Deleuze, 1991) and the process which change is produced within is established, there is an absent factor so far not taken into consideration. In the process of creating, the early phases allow for all architectural concepts and ideas to be put forth. Along the way towards reaching the attractor some ideas are inevitably screened out. The unrealistic

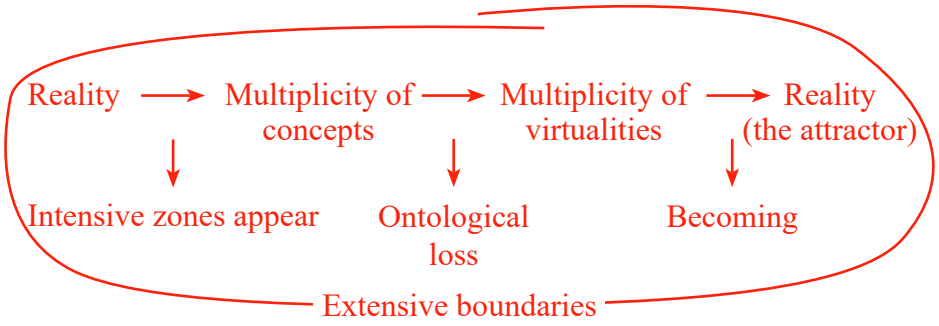

Figure 21. The extended linear chain of events.

or absurd possibilities get condemned from the meaning of virtualities, since virtualities can be made real. They are downgraded, but to discard these ideas can become problematic during a planning process, ultimately dependent on the level of realness. Conceptual ideas must in an early phase be allowed to be unrealistic and it is not until a later phase that the concepts of the virtual and the actual becomes relevant. With these preconditions, the linear description of change can be modified (Figure 21).

The step containing multiplicities are divided into two, where a differentiation between architectural concepts and virtualities are made. Between these, one could say that an ontological loss is happening, where a desertion of unrealistic alternatives is made in favour for ideas that are possible. For a moment, let us discuss these unrealities. It is a necessary step for all creative processes to pass through; “narrowing down” is a tool as strong as anything. Absurd ideas need to be left behind to be able to move forward in the process, but if an idea is absurd or not is ultimately dependent on the extensive boundaries. If the idea fits into the temporal circumstances it is possible, but if it does not it is discarded. The extensive boundaries are as mentioned a set of prerequisites, which in the best case is set up by the same people also developing the idea, but in many cases, this is not the reality. In architecture, the number of people involved in the process are many and the extensive boundaries might be hard to change once they are set. In addition, the extensive boundaries are often so foundational, that if one of them were to be changed, the project would not be the same project. The temporal circumstances can also change within the extensive boundaries, not affecting the boundary itself, but inside these, the conditions can change, for example by innovations or legislatures. This can transform unrealities into real possibilities, virtualities.

In the example of Studenthuset, the project directives put forth possibilities that during the planning process become discarded, but they are solely virtualities, i.e. all of them could have become a reality. There is however a predetermined definition of the attractor – the future, modern library – and what it is supposed to be. Since the definition is concretely formulated in a way that makes the spatial options few, it becomes inevitable that there must have been other definitions thought of before the project directives where given. These definitions were virtualities and in an even earlier stage unrealities might have existed.

The attractor of Studenthuset might seem bold, but since its definition is self-formulated, the goal becomes easy to achieve. When imagining the future, modern library one can expect radical solutions, but in the case of

Figure 22. Archive shelves in the basement.

Studenthuset the bar is set too low and it becomes relevant to question why the definition was not pushed further. This could have been the time to establish the learning-centered paradigm at Linköping University Library.

Alternative Virtualities

When looking specifically at the actual spaces the library inherits in Studenthuset, they hold almost no study places, except from the few in the basement. The actual spaces have shrunk to a minimum. Seen to this aspect, the spaces of the 1998 floorplans are actually more in line with the learning-centered paradigm's general impacts on the library, since they held group rooms and study places *within* the library. To compare only the spaces belonging to the present library to the older floorplans is superficial and deceptive, but it elucidates that the library is absolutely dependent on surrounding study spaces and public areas to live up to being a learning-centered library. Another factor is of course the learning-centered services the library is providing, but almost all of these are already digitalised and not in need of physical spaces. For the services in need of physical spaces,

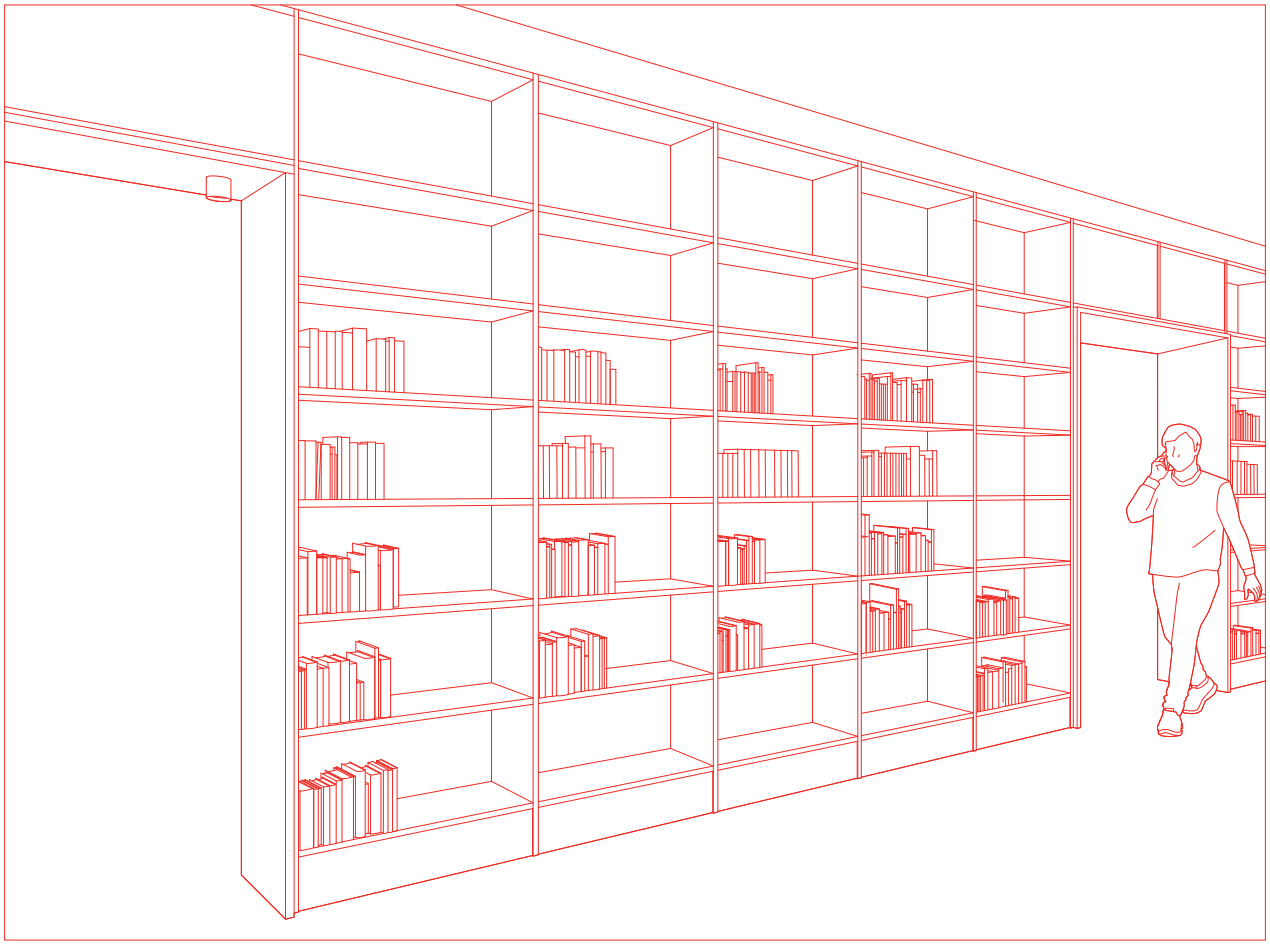

Figure 23. Bookshelves on floor 4.

there are bookable lecture halls and group rooms in the building, which do not belong to the library per se.

Regarding the collection and the actual spaces, the part of the collection left inside the building is stored in the same way as during the book-centered paradigm. It still consists of shelving systems, even though the space-minimising archive shelf usually used in repositories has made its way into the library (Figure 22). It is safe to say that the basement is the least attractive space in Studenthuset. It is shared between the library and other functions that normally is hidden away, like the recycling room, changing rooms, and storage. Other solutions could have been considered since the storage of the collection in the basement is not a futuristic solution, rather a result of trying to hide away the remnants of the book-centered paradigm.

Regarding the bookshelves on floor 4-6, they hold the collection of fiction. To use the books as a part of the decoration is debatable, but the bookshelves and their content were argued to be inspirational for the students mainly studying technical subjects, to motivate them to read fiction as well (K. Eriksson, interview, March 3, 2020). The idea to be inspirational through books is not bad per se, but the execution is questionable. Since the bookshelves stretches from floor to ceiling, they are obviously not filled. The reachable shelves make a very airy appearance as well (Figure 23). The flirtation with the book-centered paradigm seems to be a preservative act of not wanting to confuse the visitor, but it is also tentative, perhaps too tentative. The bookshelves have become a symbol for a sentimental idea of the library, or even an ornament, in a space used for something else than browsing for or reading the books the shelves hold.

Seen to the concept for the floorplans, the zoning of the fourth, fifth and

sixth floor was intended to let the collection stay close to the study places. During the planning process the distance increased, and the collection was moved out of these spaces, which makes the situation an example of a possibility that gets discarded. The architectural concept is a foundational aspect of a creative process, and when the content is changed but the idea remains, a peculiarity might become reality. The space is also stated to be the least flexible, which the alternative learning-centered functions forms a counterevidence to.

In consideration of the foregoing paragraphs, the learning-centered paradigm does not intend to eliminate all remains of the physical academic libraries. The services provided by the library are still exclusive to it, and the task to allow for transformation of information into knowledge is still the ultimate purpose of the academic library. The preconditions have however changed, and the physical materialisation of information transforming into knowledge is substituted by a social materialisation where the order of a traditional way of learning is replaced, and now allowing for a wider range of learning methods. Regarding the effects of the learning-centered paradigm, the concerns of a vanishing library applies to public libraries as well. Comparing the case of Studenthuset to a generalised idea of the public library, the latter is institutionalised in a larger context, and thereby radical changes will not appear without resistance. The public libraries have inevitably also reached the learning-centered paradigm, but the preconditions are different and it is there done with other means and methods.

With these statements made, it is safe to say that Studenthuset may not become the future, modern library in the actual future. Instead, it may be perceived as a hybrid library. Having formulated the definition of what a future, modern library is within the project and further also shaping the actual spaces in line with the book-centered paradigm dependent on surrounding spaces, the possibility of becoming a library of the future also in the future is small, but not unreal. Intensive zones might appear again with the same attractor, and perhaps sooner than anticipated due to the hybrid state.

An Alternative Unreality

When freely imagining a future, modern academic library, the idea of a fully digitalised library is within reach. The virtual library is another formulation of this, aiming at the latter definition of virtual as “being simulated on a computer or computer network” (Virtual, 2020), but to avoid confusion, the name digitalised library will be used instead.

The digitalised library is not a new idea, but it is not until recently it has become closer to being a virtuality in the Deleuzean sense. To speculate on the spatial outcome of a fully digitalised academic library is not a task assigned the architect, since the realisation of such a library lies in other disciplines’ hands. To deal with the spatial remains is a question of renovation and reconstruction, but in the prolonged to address a problem not yet in need of a solution.

The digitalised academic library is however not an unrealistic thought,

and a virtuality as real as any. In the case of Studenthuset, it must have been discarded as an unreality, partly because it is a radical act, but first and foremost because at the time, it was not possible to achieve. A digitalised library is dependent on digitised material and can only be a reality if open access to databases is established on a larger scale, which require great efforts in terms of financial means and transnational collaboration.

Market forces are interfering with the open access to published material in terms of books, and it all comes down to a question of economy. The digitisation of periodicals is not comparable to the digitalisation of books. Firstly, because the digitisation of periodicals happened earlier in time, and the market for periodicals was and still is much smaller. Secondly, the production process is also involving fewer stakeholders, while the parts affected by the publishing of a book involves author(s), publishers, libraries, and commercial retailers. The effects of a digitalisation of the book medium creates problems with copyright, publishing houses, licenses, and it requires a business model not yet established.

It seems as if much still remains to be done before the fully digitalised library could develop into a current issue. Out of the city's fundamental institutions, the library might however be the one closest to becoming a real virtuality.

6. Conclusion

The purpose of this master's thesis has been to showcase what impacts the learning-centered paradigm shift have on the physical spaces of the academic library, with Linköping University Library as a study object. The learning-centered paradigm arrived as an idea in the early 1990's, but the analysis shows that it has not yet been stabilised. The reason for the instability can be traced to the physical manifestation's dependence on architects, and the conclusion that architecture is a slow field of knowledge. Another proof of this is given by the planning process of the study object, where the architectural concept and the building permit drawings were rooted in the book-centered paradigm, while the finished result was adjusted to suit the learning-centered paradigm better. The analysis shows that the study object was torn between the two paradigms, and this was manifested in the spatial division of the archived collection and study places (which to a great extent only exist connected to the library, and not within), and in the organisational partition of the collection and the administrative and supportive functions the librarians provide digitally and in person. In other words, the uncertainties of the future will inevitably be inscribed in the building when it is created during change.

The linear chain of events has functioned as a theoretical and strategic tool throughout the work, but it is simultaneously itself a proof of what the architect can gain from appropriating philosophical concepts. It serves as a model where a search for motives has been needed, and in extension it has laid out a common ground where the final discussion can operate. It is also general enough to be applicable to other social changes, tracing the process from beginning to end.

The results that can be derived from the study object are divisible into three different aspects. First of all, the attractor for Studenthuset was to be the future, modern library. It is a bold statement to make during a paradigm shift, but when it is defined within the project it becomes easy to achieve. The finished result does not hold the radical solutions one can expect from a progressively phrased attractor. The chance to fully establish the learning-centered paradigm at Linköping University was not taken and uncertainties are inscribed in the building. The consequences of the uncertainties are a remnant the organisation and architects will have to deal with in the future, perhaps unnecessarily early.

Secondly, because the chance to fully establish the learning-centered paradigm in Linköping University Library was not taken, it may as well not be perceived as a library fully adapted to future needs, but as a hybrid library which accords to two paradigms. This is the greatest consequence, which affects the magnetism Studenthuset is supposed to bring to the university. The possibility of genuinely becoming a future library is in the present state small, but not an unreality, since intensive zones will keep on appearing. The question is how long it will take until they are acted upon.

Lastly, the learning-centered paradigm does not intend to eliminate the physical library, but the academic library might be the institution closest to becoming fully digitalised. It is still an unreality since a digitalised library

is requiring excessive efforts in terms of financial means and transnational collaboration, but this is the only impassable obstacle today.

The academic library has been through unstable periods before and unstable times will eternally return to it, but the reason for change will differ as well as the methods for reaching stability again. Taking everything into account, the main impact the learning-centered paradigm has on physical space is the risk of inscribing uncertainties into the building, which might evoke future intensities earlier than expected. It is not wrong to build during a paradigm shift, but it is of great importance to be aware of current tendencies.

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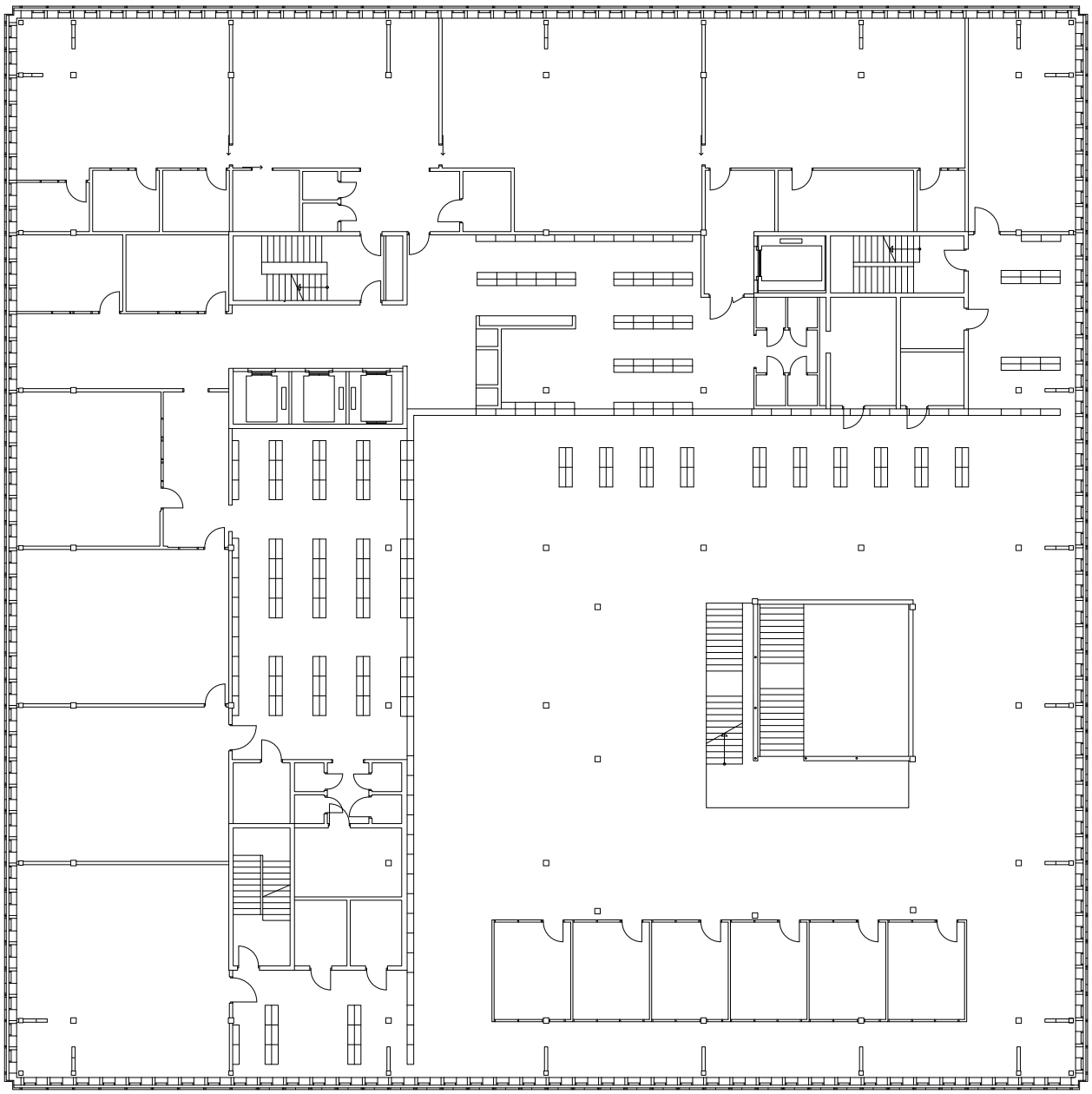
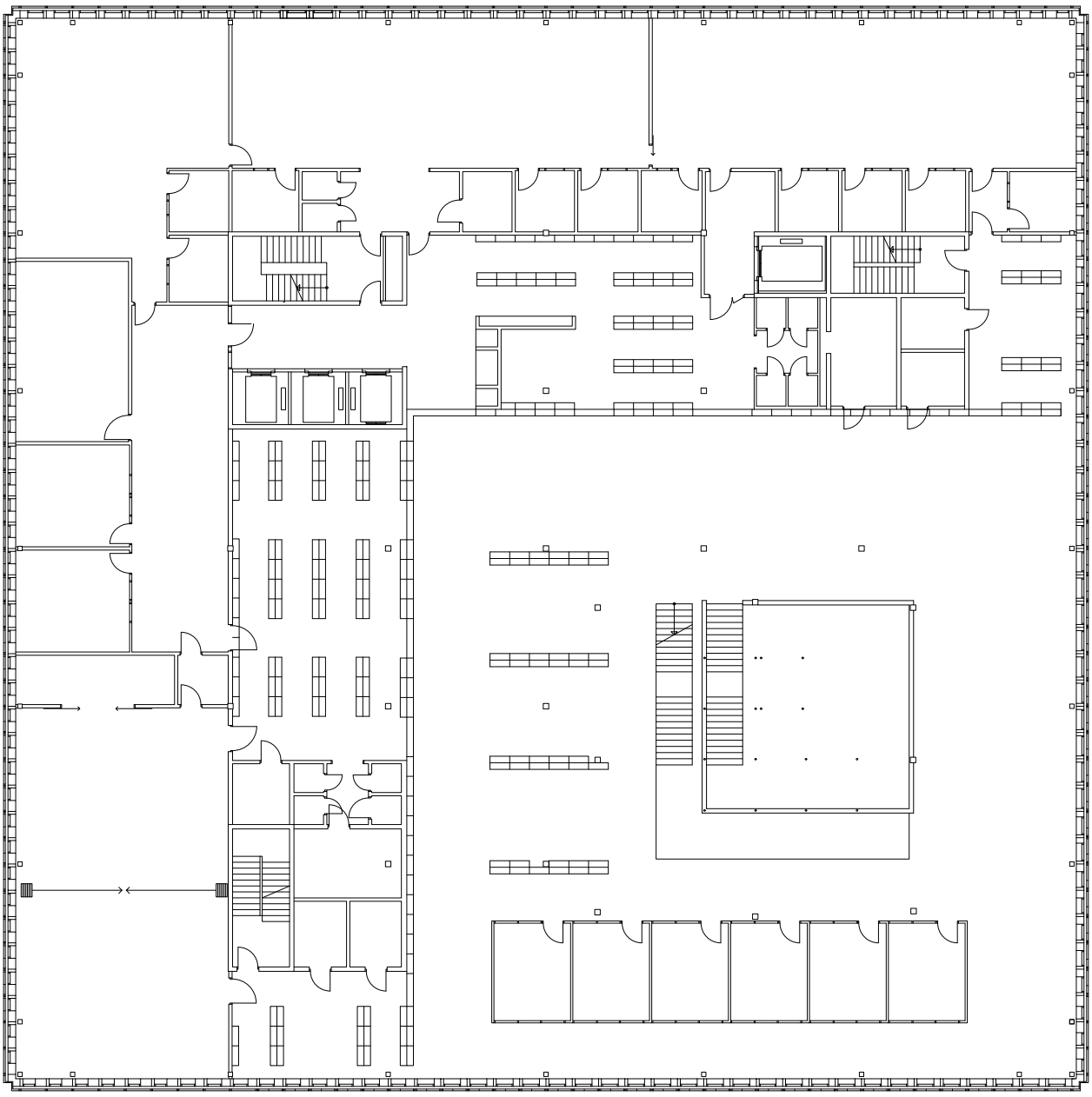
8. Appendices

Appendix A

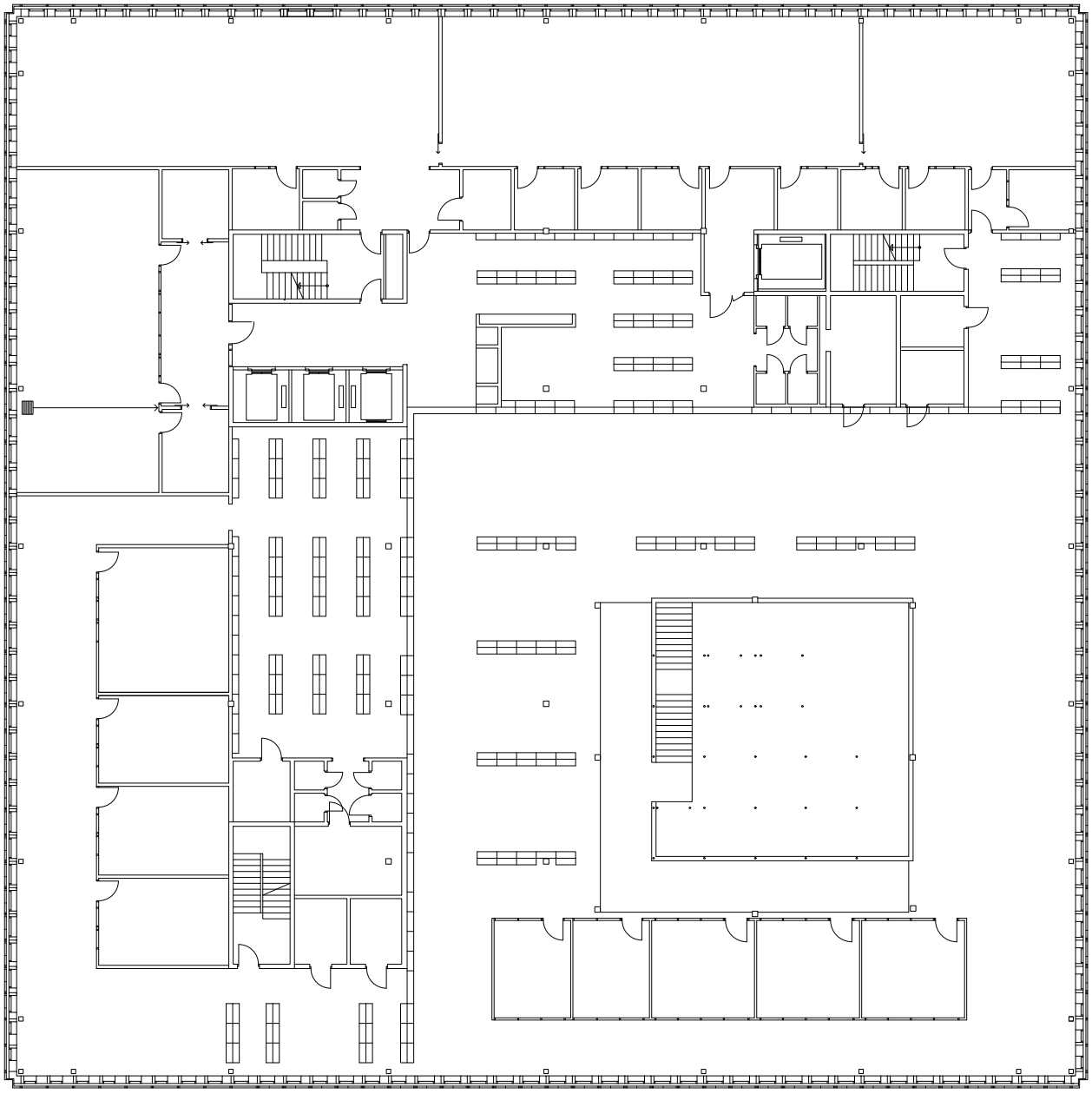
Building Permit Drawings of floor 4, 5 and 6 (Mattsson, L. & White Arkitekter, 2017).



Floor 4, 1:300.



Floor 5, 1:300.



Floor 6, 1:300.

UX-survey (Linköping University Library, 2019).

Aktivitet	Lappar	Whiteboard pl. 4	Whiteboard pl. 5	Summa
Plugga i grupp	54	104	71	229
Plugga enskilt	45	81	54	180
Skriva ut/scanna/ kopiera	15	17	8	40
Hänga/umgås	21	59	22	102
Äta mat	35	71	35	141
Spana	4	45	67	116
Låna/lämna böcker	42	24	12	78
Dricka kaffe	32	67	48	147
Läsa dagslån	17	11	5	33
Tjuvlyssna	-	10	-	10
Spela pingis	-	19	-	19