Research plan

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Thematic introduction

Learning and architecture are two processes that share common ground: 'creating space'. "Learning then, is a way of creating space in one's head" (Hertzberger, 2008, p. 67). By applying order and forming new structures, where ones was nothing or chaos, new meaningful places are created (Hertzberger, 2008).

'How can physical space attribute to learning processes?', this question has always been something that intrigued me. Architecture offers the beautiful conditions for combining space making physically and mentally. As future architects, we should be aware of the opportunities but also the responsibilities we have when designing spaces for learning. It is up to the architect to shape these spaces so learning processes within them can reach their full potential.

Introduction to the research

Just as architecture, learning is something which is strongly depended upon culture, social values and personal attributes (Hertzberger, 2008, p. 10). Many theories regarding learning have been developed, not only over time, but also among different cultures and contextual settings. Between them much variation, and sometimes even contradiction, can be distinguished. Different perspectives towards learning demands various approaches as to how space should facilitate and support learning. Learning in the past for instance has often been described as an incremental process of collecting and absorbing autonomous partials of knowledge (Hein, 2009, p. 21). However coinciding with our society rapidly changing into a much more inclusive, divers and innovative society (Caso & Kuijpers, 2019), theories have emerged which advocate to see learning as a process of construction through active participation with the environment (Hein, 2009, p. 6). These theories include a much broader spectrum of learning behaviors other that absorbing facts. Learning spaces, such as schools, museums and libraries are adjusting themselves to this development, making typologies change their characteristics. Traditions are let go and forms of learning from other typologies are borrowed and implemented. The traditional classroom that comes to mind when schools are mentioned, no longer corresponds to new and much more diverse ideas about learning (Hertzeberger, 2008).

In light of this context, architects are faced with the question how to design learning spaces within all this inclusiveness and merging. Since more recent perspectives towards learning seem to transcend traditional typologies, one could wonder whether the distinction between typologies such as the school, the museum and the library still holds true? Perhaps institutionalized labels and familiar typologies do not aligned with our current society? Perhaps a changing society asks for redefinition of learning spaces. We are arriving at a point in time where reflection upon the way learning spaces are transforming might be in place. A critical examination of how perspectives towards learning, from the past as well as the present, have influenced the characteristics of learning spaces, helps to clarify how learning spaces are transforming. It helps to understand how an intention towards leaning has been translated into space. Then, aware of what has been done before, a position can be taken towards characteristics that should define future learning spaces.

Research question:

This research focusses on the aspects of learning spaces upon which architects can insert influence through their design. The main research question is posed as followed: What characteristics, upon which an architect can exert influence, should define our future learning spaces?

Theoretical framework

During research on the topic of learning spaces, changing perspectives regarding learning have proven to be main drivers for spatial change. Learning theories thus form an influential part of the theoretical context surrounding this theme. However, in order to fully comprehend learning theories, epistemological theories cannot be excluded, they are entangled with learning theories. Differentiation between learning theories can, to a certain extent, be related back to a different position towards the term 'knowledge'. This research tries to take on an open attitude towards multiple perspectives and compare how each influence space.

In the book 'Learning in the museum' (1998) George Hein classifies epistemological theories by introducing two extremes. One end of the spectrum is defined by the idea that 'the real world' exist on its own, independently. A vision often dominating in the past. On the other end of the spectrum theories are built upon the notion that knowledge is made by individuals and only exist in their minds. Distinction between these two extremes is otherwise indicated as the realist vision versus the idealist vision (Hein, 1998, p. 17). In principle, and not entirely coincidentally, these contrasting extremes, the realist vision versus the idealist, can be recognized within theory on learning as well.

One end of the spectrum of leaning theories, which strongly correlates with a realistic vision upon knowledge, is represented by learning theories that consider learning to be an incremental process of absorbing facts. It is related to as 'the transmission-absorption notion' by George Hein, since knowledge is ought to exist independent of humans and can transferred from the source to the student. These sources try to clarifying a subjects' underlaying structure through a 'logical' and comprehensive organization. This indicates that there is one fundamental order underlaying a subject. Opposite, learning theories promoting learning as more than an incremental process of absorbing facts, and rather as a process of active construction, correlate with an idealistic vision upon knowledge. It represents the other end of the spectrum. Those theories are built upon the notion that knowledge is something that is being made rather than something already present. It is not contained within an object itself, but can be created through interpretations. The static vision that the realist applies towards knowledge as something existing 'on its own' is being questioned by those who believe knowledge to be a construct (Hein, 1998).

The method as applied by George Hein, defining two opposites and thus creating a continuum, has helped this research to understand and compare variating perspectives towards learning. In reality the variety is endless and the debate about 'knowledge' ever evolving. Many perspectives exist that have taken a more nuanced position. Creating a continuum, defined by two extremes, offers the opportunity to compare perspectives by placing them between these opposites.

Benjamin S. Bloom (1956) introduced the idea that learning is an process that can evolve. He pointed out that the students' behaviors seemed to be categorizable in a hierarchical order. Bloom created a taxonomy that described the cognitive processes that 'thinkers' apply and use when they encountering knowledge, increasing from simple to more complex cognitive skills: 'remembering', 'understanding', 'applying', 'analyzing', ' evaluating' and 'creating'. The more complex behaviors build upon the preceding ones, as an integration of lower cognitive skills. In the period when Bloom developed this behavioral language, theory which could fully support his notions was not developed yet. Nevertheless the development of this behavioral language was of great value, since it helped to make acts of learning explicit and discussable. It sketched the outline for future theories to build upon (Conklin, 2005, p. 156).

In principle Bloom has built his theory upon a realistic approach, not excluding the notion of certain fundamental orders. Through remembering and understanding knowledge partials can be learned. Yet the introduction of the idea that when one has obtained a valuable amount of 'base knowledge', they are capable of then creating their own knowledge, does not fit with an realistic approach. Skills such as remembering and understanding having the potential to evolve into more complex skills such applying and eventually creating, perhaps even leading to new fundamental discoveries, seems more fitting to an idealistic approach. The taxonomy of bloom thus could be position somewhere in the middle of the continuum defining epistemological theories, there where a realist and an idealist vision meet.

By appointing behaviors such as 'exploring', 'applying' and 'creating' as forms of learning, the production and consumption of knowledge are becoming inextricably linked and the individual is becoming more actively involved (Caso & Kuijper, 2019). With incremental learning theories, the distinction between 'the producer' and 'the consumer' of knowledge is clear, since knowledge is ought to exist independent of humans. However, this distinction is less applicable with constructive learning theories, where knowledge is seen as something constructed through its consumer. This rising acceptation of constructive learning theory also correlates with the

emerging of theories that advocate the importance of the context in which knowledge is constructed. Donna Haraway (1988) advocates the term 'situated knowledge', although many terms exist today that in principle try to capture the same meaning, such as 'situated cognition' (Brown, Collins, Duguid, 1989), 'authenticity' (Doyle, 2000) and 'social cognition' (Vygotsky, 1978). With the term situated knowledge Haraway indicates the notion that knowledge is always influenced by its specific context. The vision of those observing, as well as the subject observed, are subordinate to culture and language and cannot be seen as pretheoretical entities (Thompson in Smelser & Baltes, 2001). Intellectual tools that help to stimulate somebodies personal development thus are derivatives from the socio-cultural settings as well. Guidance can be given through interaction with people who are well accustomed with those tools (Rogoff, 1990, p. 140). Harraway declares "...objectivity is about limited location and situated knowledge, not about transcendence and splitting of subject and object. It allows us to become answerable for what we learn how to see." (Haraway, 1988, p. 583). Objectivity is thus explained rather as a tool to communicate about a subject than an actual representation of a fundamental order or 'essence'. Theories upon learning which include quite similar approaches towards knowledge are thus more in favor of including and understanding multiple points of views rather that accepting one as dominating. We all are our own perceptual systems. "...all eyes, including our own organic ones, are active perceptual systems, building on translations and specific ways of seeing, that is, ways of life"." (Haraway, 1988, p. 583).

A deeper understanding of learning theory has helped to discover the correlations between characteristics of learning spaces and a different dominating perspective towards 'knowledge'. A realist vision can be held responsible for quite distinct spatial and educational setups. They have established the traditional typologies we have come to know nowadays. However, parallel to this visions, and in particular increasingly over time, visions have emerged which are more idealistic of character and thus ask for different approaches towards learning. It has instigated an enormous amount of variation among learning spaces as well as merging of typologies, to the extent where one could wonder whether boundaries have been passed.

Methodological framework

The goal of this research is to take a position towards the characteristics that should define our future learning spaces. In order to do so this research has adopted the form of an essay. To substantiate my opinion first the field of learning spaces is explored trough a typological study, taking into consideration the present, as well as the past. Secondly a comparative study of these typologies is made. From this study conclusions are extrapolated in which characteristics of learning spaces are linked to underlaying perspectives concerning the concept of learning. These conclusions are merged in a framework, built up by generic themes. Per theme the influence of different perspectives towards learning is made explicit. The spatial translations of the most extreme perspectives, the realist versus the idealist, frame each of these themes. They create a continuum upon which the influence of other perspectives can be placed as well.

Initially this research was set up as research driven by design. My intention was to create a collection of models and artifacts that resembled experiments on potential future learning spaces. Through the method of research by design I intended to experiment with the correlation between physical settings and various learning behaviors. However, as the research progressed the results guided me towards a different direction.

First, as was originally planned, a typological study was made. This study was not restricted to solely the typology of the school but included the typology of the museum and the library as well. The study was based upon literature, case studies and transcriptions of interviews. It analyzed how the characteristics of these typologies have developed over time and what has been the instigator for possible change. It focused on those characteristics which the architect can influence. This has been made explicit through praxeological descriptions and diagrams. These findings have been collected into three different documents, each corresponding to a specific typology. These documents have been structured according to the same organizing principles. Firstly background information is given on how the typology is traditionally defined and its development over time. Secondly progressive changes within these archetypes, affecting the traditional perception of the typology are pointed out. To conclude, a transcription is included in which progressive change is discussed with an expert of the specific typology.

The results of the typological research were expected to deliver concrete evidence on how particular physical spaces support specific learning behaviors. However, contrary to the expectations, the results indicated in quite early stage that socio-spatial processes also played a very important role. Instead of describing and constructing our future learning spaces only with spatial principles, social-spatial dynamics should be addressed

as well. The inclusion of socio-spatial characteristics would not have to mean major changes for the goal of this research. Yet the following study did affect the pre-conceived research approach.

Namely, the comparative study that followed the typological study brought the three typologies in relation to each other. By taking on an overarching attitude, attempted was to overcome oppressive systems and to place the development of these typologies within a broader, societal context. It let to the discovery that difference between learning spaces is greatly the result of different perspectives towards learning. Those variating perspectives each emphasize different learning activities and thus results in different spatial configurations. The many uncovered perspectives on how people should learn and how this can be translated into physical, as well as the importance of socio-spatial characteristics, indicated the depth and nuanced character of this topic. I felt the need to reconsider the original approach of this research. Originally the intention of the typological and comparative studies was to get familiar with the topic of learning spaces, to function as a base of inspiration from where to start an intuition based exploration. However, the typological and comparative study made me aware of the variety and depth of the research field, as well as the lack of reflection upon this variety. So instead of adding to this variety by even more experiments, it seemed rather valuable and more relevant to reflect upon the already constructed learning spaces and to learn from this information. Firstly, I prospected my own position towards learning and building upon that, towards learning space, before experimenting with designing future learning spaces. “Positioning is, therefore, the key practice in grounding knowledge organized around the imagery of vision” (Haraway, 1988, p. 587).

In order to make the correlation between perspectives upon learning and there (socio-) spatial translation explicit, eventually this research has taken on quite a comparable approach as George Hein (1998) used in his research on epistemological theories. A framework is constructed which offers the possibility to compare the influence of different perspectives upon space, through the use of a continuums related to specific themes. These themes represent the field of characteristics that overlap with the field of architecture. Spatial and socio-spatial characteristics of learning spaces are categorized in four generic themes; Educational vision, internal orientation, accessibility and autonomy. Continuums are linked to these generic themes. The spatially and socio-spatially influence of the two most extreme perspectives towards learning, frame the variety possible within them. They form the boundaries of each generic theme. Inspired by Donna Haraways, who mentioned; “...all eyes, including our own organic ones, are active perceptual systems, building on translations and specific ways of seeing, that is, ways of life. ...there are only highly specific visual possibilities, each with a wonderfully detailed, active, partial way of organizing worlds” (Haraway, 1988, p. 583).” I decided to visualize each of the opposed spatial or socio-spatial consequences by a collage of praxeological diagrams, images and associative notions.

The framework that emerges through this approach maps the field of tension surrounding learning spaces, instigated by all these different perspectives circulating within the field of learning spaces. It will form a substantiated base upon which I build my own position regarding the desired characteristics of future learning spaces. This position will be communicated and visualized as well by using the constructed framework and the adjoining continuums.

Relevant references:

The book ‘Space and learning: Lessons in architecture 3’ (2008) by Herman Hertzberger has formed an inspiration sources for this research. It describes how our changing society is asking for different approaches towards designing learning environments. It emphasizes how architects can actively attribute to somebodies personal development. This book has also been a useful attribute for the typological study regarding schools. The method applied within the book ‘Learning in the museum’ (1998) by George Hein shows much resemblance with this research. Although George Hein has specified his research on the typology of the museum, whereas this research is questioning the distinction between typologies, his book offers guidance in structuring research and through offering theoretical background. It explains the field of theory related to learning spaces as well as the history of educational activities occurring within museums. A comparison is made of multiple perspectives towards this topic and concludes with a description of the constructivist museum and the task set aside for architects, to design well-functioning educational museum spaces. Other literature useful for a broader understanding of knowledge and learning theory is the ‘Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain.’ by Benjamin S. Bloom (1956). Bloom advocates for the acceptance of a broader spectrum of learning behaviors. Moreover, the article ‘Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective’ (1988) by Donna Haraway, published within the magazine ‘Feminist Studies’, relates to the topic of learning through discussing the perception of ‘knowledge’. It discusses the shift

occurring within our changing society and promotes the notion that knowledge nowadays is never disengaged but always contextualized. The book 'Cities, museums and soft power' (2016) by Gail Dexter Lord and Ngaire Blankenberg discusses the importance of the context as well. It introduces the term of 'soft power', which is strongly related to the social characteristics of learning spaces. Another publication which offers a useful collection of different perspectives on the transformation of museum spaces is 'Reshaping museum space: Architecture, Design, Exhibitions.' (2005) by Suzanne Macleod, professor of museum studies at the University of Leicester. Concerning research on the typology of the library in the Netherlands, Olindo Caso and Joran Kuijpers published 'Atlas: Makerspaces in Public Libraries in The Netherlands' (2019). It offers relevant information by addressing the evolution of the library as a typology as well as the topic of future learning spaces and the challenges architects will need to face.

Relevance of the graduation project

At the point of societal change, we have the opportunity to redefine our concepts. An inclusive and more diverse society allows for many (contradicting) perspectives and opinions to develop parallel to each other, moreover it distorts boundaries. Moving away from traditional paths is an experimental process in which disbalance occurs. This is necessary in order to arrive at a scope of new conventions. Within the field of learning spaces this process can be captured as well. With traditional typologies changing, an imbalance arises in the interface between architecture and learning. Changing perspective towards learning ask for other methods.
Thus learning spaces are to facilitating other, and recently a broader spectrum of learning activities. Yet In doing so, typologies are changing their characteristics programmatically, as well as in their (socio-)spatial configuration. Learning spaces start to deviate from the traditional typologies and its original intention. Through reflection, disbalance can be made explicit and it can offer possible solutions on how to best re-align the (socio-) spatial configuration with the intention of the space. Or perhaps it indicates to a redetermination of typologies all together.

The approach of this research has created the possibility to explore how typologies are transforming and how I position myself towards this transformation. The design project that will follow this theoretical research, part of the graduation project, will take on this exploration even further. It is an continuation, for which this research has defined a starting point. It is a critical examination of how perspectives on learning are translated into space. It offers the information necessary to take a theoretical position on what I believe 'the process of learning' includes. Beside it explains which (socio-) spatial characteristics support this vision towards learning. In short, this research forms a substantiated base upon which I can build my own position towards the characteristics of future learning spaces.

With this research I hope to attribute to the discipline of architecture as well as the discipline of education, in the form of offering some reflection. Reflection upon the direction that our current learning environments are developing towards, and how we, as future architects, can position ourselves towards these transformations.

Reflection

During the period in which this research plan has been setup, I experienced how doing research is an iterative process. The push and pull between actively steering towards a specific goal and allowing a research to develop naturally according to the results discovered, constantly changed the identity of the research as well as the research plan. Initially I had a different intention with this research, yet through diving into the problematics, the research made me aware of different approaches possible to confront the topic. By letting go of the idea of 'researching by design' I allowed myself the freedom to explore my own position towards learning spaces through a more theoretical approach.

Information concerning the topic is rich and very accessible. This excess to knowledge however made organizing relevant results challenging. It has been a process of rewriting and contemplating. The goal of the research changed when new information was found. As a result, the organizing structure needed adjusting as well. The same account the other way around, when results were structured differently, the research led to other conclusions. In order to be content, the setup of my essay has changed quite often. Partials of text that first belonged to the introduction now for example are part of the conclusion. It kept searching for a way to include epistemological theories as well as learning theories, without letting it take over from the purpose of this research, which is to understand the relation between learning and space.

Fortunately, the aspect or research by design has not been lost completely. The design project which at the moment is running parallel with this research will take on this quest, through experimenting with potential new typologies and (socio-)spatial configurations. This research has defined a more distinct starting point for exploration, rather than starting this exploration totally based upon my own intuition. It made me aware of my own need to first define some substantiated ground, before letting intuition take over.

The setup of the additional course AR3A010 Research Plan has quite a theoretical character, which might also have influenced the shift to a more theoretical approach. The lectures given in this course offers useful information on how to substantiate theoretical academic value. However, it does not yet connect proper with more experimental methods such as 'research by design'. This could be something for consideration for future developments of this course.

Through this additional course, AR3A010, I learned the different epistemes an architect can employ when doing research. Initially, my preference leant more towards phenomological methods, related to perception and experience of a space. But as the research developed this took on a different direction. The research started to focus more upon the use of space and the relation between social and spatial practices. Thus the research took on a more praxeological approach. I tried to include social sciences within this research, through literature as well as interviews and conversations with people related to the field of learning spaces.

In the beginning of this course we were confronted with idea of architecture being an 'impure discipline' (Pallasmaa, 2003). The interdisciplinarity of the field of architecture makes that research within this discipline balances between sciences and humanities. The development or this research, as a search for the connection between (socio-)spatial practices and epistemological perspectives, confirmed this statement for me. The physical cannot be seen separate from the mental: "Architecture is simultaneously a practical and a metaphysical act..." (Pallasmaa in Mackeith, 2005, p. 335-336).

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