CONFIGURING ACADEMIA. Academic entities and spatial identities

AUTHOR: Daniel KOCH  
School of Architecture, KTH Royal Institute of Technology, Sweden  
e-mail: daniel.koch@arch.kth.se

Anders BERGSTRÖM  
School of Architecture, KTH Royal Institute of Technology, Sweden  
e-mail: anders.bergstrom@arch.kth.se

Lars MARCUS  
School of Architecture, KTH Royal Institute of Technology, Sweden  
e-mail: lars.marcus@arch.kth.se

KEYWORDS: Building Morphology, Architecture, Campus, Identity, Academic Environment, Historical Development

THEME: Historical Evolution of the Built Form

Abstract

Academia has a long tradition of structuring itself around academic subjects, often epitomized through architectural manifestations such as individual buildings and whole campi. These materializations serve as sites of research and education, but also serve to describe the university as whole as well as its institutional parts, their definitions and their interrelations. This description goes deeper than simple definition of specific buildings for specific activities or subjects, but rather describes the idea of academic structures and relations between different people in the campi. This paper makes a comparative study of one of the more successful research universities in Stockholm, studying the use of spatial configuration and programming when the main campus was established in the first decade after the second world war, and how it was used in the following large-scale expansion beginning in the 1960s. It shows how, for both pragmatic and ideological reasons, radical shifts in the relation between buildings and academic subjects, as well as academic individuals and the units central to these descriptions, have taken place in the years in-between, and scrutinizes some of the effects coming with such a change.
INTRODUCTION

Like many other institutions and programs in society, universities are so intimately connected to the buildings in which they reside that the activity and its buildings can be hard to distinguish from one another. What we can see is the tendency for societies to manifest themselves through built form, not only through symbolic representation but as a way of describing and defining their component parts and their relations, and how they relate to everyday practices (e.g. Hillier & Hanson, 1984). Activities that manage to manifest themselves tend to stabilize whereas those that do not may become more fleeting or passing. In contemporary society, which at least on some levels is characterized by continuous change, established solutions can also stand in the way of development, and traditions or typologies may hinder us from seeing how things could be done differently. In this sense, Karolinska Institutet in Stockholm becomes an interesting example in its interplay between built form and highly qualified academic production. Studying its main campus north of Stockholm, one also finds an environment that has gone through several stages of development throughout the last hundred years, with different views of the conditions of knowledge production as well as the role of the university and the idea of knowledge. The original study behind this paper identified three main stages of the campus development up until recently; the competition in 1936-1937, the establishment between 1938 and 1957, and the renewal from 1960 to 2001 (Bergström, Marcus, & Koch, 2010). In this paper, we will mainly focus on the configuration of select buildings, and how academic structure and knowledge production manifests through filters of identity (see e.g. Hillier & Hanson 1984; Markus, 1993; Koch, 2004; Psarra, 2009). Thus, for the sake of this paper, intentions, historical conditions and processes are given a background role as focus is put on analyzing the built structure, somewhat corresponding to the hermeneutical understanding of Ricoeur (1981) in that it focuses on what ‘the reader’ can make out of the ‘work’ independently of intentions and production. This, it should be noted, is a methodological stance taken for this paper, and not for the study as a whole which gives a much heavier emphasis to historical description and analysis.

Finally, it can be noted that the coming comparisons will be made in a particular way: the analysis will be performed based on the characteristics of each case, rather than using the same method and measures throughout, as we believe that this better shows the shifting foci and character of the different times. The narrative sequence of the paper will follow chronology, with increasing comparison between cases, before a thematic conclusion.

THE COMPETITION

In the summer of 1936 an architectural competition for Karolinska Institutet’s future campus was announced. The background was the intent to co-locate the academic institution with the hospital, Karolinska Sjukhuset. The planning for a new campus had been ongoing several decades, with various places suggested, tried, and refuted, before Norrbacka in Solna, just north of Stockholm, was settled on. Established already in 1810 to satisfy military needs for field medics, Karolinska institution had until then first been co-located with Collegium Medicum at Riddarholmen before it moved to its own buildings in the block ‘Glasbruket’ in Stockholm, where the temporary Garrison Hospital provided opportunity for practical training for students (Lennmalm, 1910; Jorpes, 1960; compare: Lindkvist, 2008).

Clinical practice was also the basis for the empirically founded view of knowledge that grew forth within the Institute that already early on provided successful research, and in the early buildings it can be seen how research and education was considered as integrated phenomena [Figure 1]. Followingly, it was considered obvious that the university would be located next to the hospital – from an ideological point of view they
constituted a unity, no matter occasional conflicts them in-between in daily practice (Lagerkvist 1999; Rocca, 2006). The historical connection between practice and theory was also important for the competition programme, by and large worked out by Carl Westman who favoured a ‘pavillion’ solution on the basis that an educational hospital had specific requirements on future expansion potentials (Åman, 1976; also Palm, 1954; Birch-Lindgren, 1932) – a view which was extended into the university competition. A “well structured pavilion system” with free-standing buildings for each institution was proposed, even if it was allowed for participants to suggest other solutions (Lewerentz, 1936-37).

![Diagram of the old building for the laboratory and auditorium for Chemistry at "Glasbruket" on Kungsholmen. Wooden etching after drawing by O. Mankell 1866 and drawing from Kemiska Institutionen (1954). J-graph made in JASS developed at KTH (Koch, 2004, p. 177). The graph is slightly simplified.]

This ‘pavillion system’ further meant that the campus arrangement corresponded to the concurrent academic structure of the Institute at the time, with ten theoretical institutions, of which the two pathological institutions had already been placed on the hospital grounds and the bacteriological was still under investigation, leaving the competition to encompass seven institutions: Anatomy, Histology, Chemistry, Pharmacology, Physiology, Forensic Medicine and Hygiene. In addition, buildings for administration and library, the student union, and an auditorium were included.

The programme was quite specific regarding the design and organization of the buildings, where the buildings represented the academic subjects, and where the professor was the hub of operations in each
unit. This central role also balanced research and teaching, the ideal back then even if less prominent within academia today. This strategy led to, as we will see more clearly in the coming, that the role of the professor was focused on, whereas the individual professor was de-emphasized compared to concurrent research institutes commonly centered around the excellence of individuals (Widmalm, 2001). The programme also prescribed separate entrances for students and personnel, a central corridor to allow movement without disturbing ongoing work, and provided a plan sketch for each institution, worked out by Åke Tengelin (Lewerentz, 1936-37), which became strongly influential for the competition proposals. In all, the competition gathered 15 proposals, and the building plans mostly varied marginally compared to the sketches provided.

Figure 2. The winning proposal “Per Haps” by Ture Ryberg, model photography in Byggnästen (1937).
The idea of ‘one subject – one building’ also carried a long tradition within academia, where for a long time the establishment of a university building was more or less equal to being recognized as a full academic subject (Fors, 2006). As an ordering principle for universities it thus had roots far back in history, to some extent constituting a way to think, rather than something to think on (e.g. Hillier, 1996). It becomes a conceptual and generative principle as much as a prescription. As a result, the buildings become a description of the Institute and its operation; that is, the built environment becomes something to learn from, and not only in (see e.g. Markus, 1993; Bennet, 1995; Koch, 2007), and the role of each building to give a proper narrative of the subject as a whole – and principles of social and spatial configurations found in earlier academic buildings in Sweden (e.g. Fors, 2006; Widmalm, 2001) can be found in the new Karolinska Institutet.

Figure 3. Proposal for the Institution for Chemistry. Adjusted proposal by Ture Ryberg 1937, in Kemiska Institutionen (1954).
It is worth noting that in spite of the emphasis on future expansion both in the programme and in the jury’s evaluation, the arrangement of buildings to constitute a common, exterior space was prioritized, and more spacious proposals were criticized for making the intimate co-operation between institutions problematic (see further Schmalensee, 1937). The pavilion solution was furthermore preferred from an architectural point of view as pavilions were more easily adapted to the uneven terrain (Lewerentz, 1936-37). We can thus already in the competition programme, proposals, and evaluation see how conflicting ideas and preferences are worked out towards a solution that may seem counter-intuitive compared to some of the principles advocated when encountered with the material conditions in the process of design and evaluation (Anderson, 2000). The winning proposal by Ture Ryberg, motto “Per Haps”, was the only one grouping the buildings along both sides of a north-south park axis [Figure 2], and while following the initial sketch plan in principle, Ryberg made one significant change from a configurational point of view: instead of placing the lecture halls in the end of a singular building volume, he chose to place it in the middle where two building volumes met. [Figure 3]

THE ESTABLISHMENT

After the competition, Ryberg was entrusted with both master plan and individual buildings, but the project was delayed due to the outbreak of the 2nd World War. In the following year, a special commission was established to make savings on the construction, leading to substantial cuts, especially for the buildings first in line (Ryberg, 1955). This, amongst other things, led to the combination of the institutions for Anatomy and Histology into a single building (1945-1947), and significant cuts to the administration and library building (1944-1946). However, the principles of small building volumes gathered around a central staircase and of facades in red brick was established (Häggqvist, 1960), and the exterior was within ten years considered on par with historic listed buildings (Byggnadsstyrelsen, 1970). The case we will look closer at is the building for Chemistry, built 1949-1951, which provides both an understanding of the morphological type and offers a morphological exception, and was significantly altered compared to the proposal seen in Figure 2 and 3.

One of the reasons for these changes was that the institution remained in their old facilities until the actual planning took place in 1945, and another that the institution had grown to roughly double the size both in education and research (compare: Ljungström, 2010). As the plot did not quite allow enlargement by simple extrusion, Ryberg (now co-operating with Einar Hammarsten) decided to locate the research divisions, which by 1947 had two professors instead of one, around an atrium, providing contact between them [Figure 4]. The overall distribution thus remained in two building volumes, but now consisting of one with two parallel course laboratories – one for each professor’s subject – and one with the two research divisions – one on each floor. In addition, the auditorium was now given its own, smaller volume.

As the principle one subject-one building provided the opportunity to through the composition of buildings describe the constitution and configuration of academic subjects at the Institute as a whole, it furthermore allows, arguably even demands, that each building describes the internal configuration of each subject. From this point of view, it can be seen how the architectural solution provides certain configurational properties of interest by how it relates entrances and workplaces, clearly describing individual roles as well as relative positions of the different inhabitants of the building. A good starting point here becomes the

---

1 The Jury consisted of architects Ivar Tengbom, Gunnar Asplund, Nils Einar Eriksson, Åke Tengelin, for the Institute professors Göran Liljestrand and Häggqvist, and for the Swedish Government Nils Löwebeer. (Häggqvist, 1960)
researchers’ entrance [Figure 5], which sets the stage right inside the entrance as you directly face the choice of entering the education or research side of the complex. Furthermore, if you go to the research side, you directly have to chose which of the two research units you aim for: first or second floor. The researcher is thus directly confronted with choosing a role; teacher or researcher (compare: Widmalm, 2001). While altering over the day, accumulation of similar choices over time serve to build up relations to Self; role, identity and social position (e.g. Butler, 2005).

**Figure 4.** The Chemistry Building with the atrium (top left), the professor’s personal laboratory (top right) and the building seen from the main entry road (below). From *Karolinska Institutionen* (1954).

While the researchers and teachers thus face a comparatively clear tree structure, the situation for the students is another. From the student’s entrance, you rather face a series of spaces, with only minor branching until you reach into a tree structure when entering the staircase of the research department. In
the parts regularly visited by students, the *serial* structure is dominant, de-emphasising choice in favour of sequence and sequencing, producing cognitive and social distance (Hanson, 1998; series, trees: Foucault, 1997). The building from the student entrance is significantly deeper than form the researchers’ entrance, with less choice along the way, emphasizing difference between student and the residing professor in the far end of the configuration.

Figure 5.a. The Institution for chemistry as it was built, plans after Ture Rybergs Drawings in *Kemiska Institutionen* (1954).
If we instead take the professors’ room as point of origin, which arguably was done in the design, we again find a tendency towards the serial and a significant depth. Interestingly enough, while distance to ‘the professor’ is maximized from the student entrance, the distance to teaching and the other professor respectively is *equalized* from the point of view of the professor’s room. That is, the other research division and teaching is described as equally different and distant from the work of the professor in question. Distance is maximized to *entrance, teaching and the other authority*. This allows both professors to have a position commonly assigned to people of authority in the building, consistent with how it is done in many other buildings (e.g. Hillier & Hanson, 1984; Markus, 1993). The professor’s room is also in the far end from the entrance to the research unit, separated from the atrium by a small antechamber, which also had a personal WC. The room furthermore had direct access to the professor’s laboratory, also behind the small antechamber, creating a small personal workspace.

The spatial organization thus contains expressions of hierarchical relations in morphological depth, sequence and narrative (what and who needs to be passed). It also clearly expresses who has the right to remain undisturbed, in control of their own time, and who is subject to the activities of others. The antechamber and the secretary located next to the professor strengthens this further, creating depth and differentiation also within the research unit – no matter the social conditions and practices inhabiting it. However, even if it can be said that the professor is thus singled out as an authority, it is worth noting that

---

**Figure 5.b.** J-Graphs for the institution, seen from three points (researchers’ entrance, students’ entrance and professor’s room). J-graph made in JASS developed at KTH (Koch, 2004, p. 177). The graph is simplified by removal of certain functional spaces (storages, WC) and a slight reduction of staircase spaces to improve its readability; *principles of configuration* are kept intact.
what is pointed out is not the person, but the position. That is, the configuration assigns a position of authority to someone, who may well be exchangeable, similar to the academic structure of the Institute. The organization is thus to some extent prescribed by the building, but the individuals’ roles in the organization is, conceptually, flexible.

Furthermore, this morphological description means that if it can be said that each subject is constituted by research and teaching, it can also be said that it within each subject was important to separate these activities – a description further strengthened by Ryberg’s solution of horizontal separation. This solution provided an opportunity to create a transition zone between the two that not only further separates, but also makes possible to have rooms for teaching assistants and preparatory laboratories for lectures and student laboratories in-between, thus providing a separate territory for teaching staff and preparation. These then provide insulation between research staff and students (insulation: Hanson 1998). Thanks to the morphological conditions of the building, these spaces could also be located between the entrances. Thus, the few spaces of interaction between teachers and students that were not directly the student labs or the auditorium, were neutralized and separated out from the research operations, at the same time as they were separated from regular education by being accessed directly from the researchers’ entrance. This would have been less easy in a vertical separation as proposed in the competition programme, as these spaces would then have to be assigned either to the research or the education floor.

This is, however, the building studied as configurations of permeability, which in certain locations differ radically from those of visibility in a rather descriptive manner (see Koch, 2010). In the case of Karolinska Institutet, this is also where the Chemistry building deviates most from the others, and we will focus specifically on this deviation in the form of the atrium visually connecting the two research departments.

It is worth to acknowledge that the atrium does offer potential for communication, but it is important to understand what kind of communication is in question – which is predominantly visual communication. Such a distinction can be elaborated through Goffman’s (1966, 1990) different levels of interaction, further discussed by Giddens (1984). They both start with the physical condition of co-presence as a foundational social condition – similar to how it is argued by Hillier (1996) – to then develop further and further until the stage of focused interaction:

- Focused interaction
  - a) Encounters (face engagements)
  - b) Routines (episodes)

- Unfocused interaction
  - Social occasions
  - Gatherings
  - Co-presence

Both Goffman and Giddens regard these levels as stepping-stones; that is, in order to reach a higher level, one must first pass the earlier levels. In this regard, ‘gatherings’ or ‘social occasions’ should not be taken literally but as descriptors of depth of the interaction, level of the participants’ involvement and suitable subjects for conversation. Depending on conditions as social and cultural context, history, personal relations, and personality, moving through the steps can then go differently quickly. It can be helpful to, in addition, introduce the concept of co-awareness (Calefato 2004; Butler 2005) – that is, the situation where two people are aware of that the other is aware of oneself, commonly established through eye-contact.
The atrium in the Chemistry building specifically more or less automatically creates the first level – co-presence – as soon as two individuals move between two working spaces at the same time. It further facilitates eye-contact through its geometry allowing good visual interrelations between floors, with the low flow rates supporting eye-contact and hereby co-awareness, and in extension this could drive towards increased qualitative interaction. The problem in this specific case is that the atrium does not facilitate these following steps: in order to reach further – for instance, in order to conduct a conversation beyond a nod of recognition or a brief greeting – it is more or less a condition to be able to meet on the same floor. It is possible to speak past the level difference, but it is not a natural way of conversing nor a comfortable one, and the volume needed is impractical. The closest connection between floors is, however, comparatively distant, and in practice level differences have shown to have high impact even in more accommodating situations.

The atrium hereby facilitates visual communication, whereas deeper interaction hardly is supported. It should be noted that already this level of communication is, of course, both productive of identity, community, and recognition, and can be argued to increase the chance of more focused interaction to take place should those having established recognition meet elsewhere – just as a vague acquaintance can be the natural conversation partner at a party where one knows no one else. The atrium furthermore ensures that the research departments, in spite of being on different floors, in practice share a space and thereby has something in common, which should not be underestimated in a process of identity production. Sharing space (or objects) in this way becomes an important, if low-intense, force creating communality and perhaps even community (see Miller, 1998a; Markus, 1993; Koch, 2007). The detailed design choices of the space is, however, important for the architectural support for such communication and community construction.

Caricatured, the atrium can be said to accentuate common identity and belonging, while setting clear boundaries – it is meant that we daily should interact this much, but not more. It is plausible that this construction of communality and belonging was the whole point, and that further degrees of interaction was not aimed for, in which case it was not a problem in comparison to the goals. Growing competitiveness within medical science could even suggest that separation was important as units and groups raced for the next finding or publication. This leads to another character established through the atrium: at the same time as it enables visual (and auditory) communication, it is also controlling and disciplining. It is easier to see if someone is in or not and when someone comes or leaves. The movement is both extended, and most of all, more exposed to the offices and laboratories than in a corridor solution. Discussions can be overheard between levels, possibly creating problems in competitive situations. New co-workers are quickly trained in how to act, and in the routines and practices of the workplace, comparable to the disciplining effects of the early open plan museums discussed by Bennet (1995), building on Foucault (1991; also Bourdieu & Darbel; 1991; Butler, 2005; Huang, 2001).

This discussion has wider implications for the establishment as a whole in the form of the central park axis with the buildings grouped along each side of it, which can be compared to the atrium even if the relations between different communication levels has been displaced [Figure 6]. The park is a space shared by all visiting the institution – it even serves as a narrative of symbolic value as the progress of the education is described by the sequence of institutions (Petrén, 1960), internally describing each subject but exteriorly also the unity of the Institute by morphological similarity and the unity in the red brick facades.

Everyone thus builds a relation to the park, through direct use and visual contact (including from windows) (Massey, 2005; Ek & Hultman, 2007). This, in turn, leads to mutual exposure; everyone can at some point see everyone else in this space, even if tendencies are that some are more often the exposed, and others the
audience. The Chemistry building here has a special role and character, in that it is directly by the main entrance to the campus, with its configuration so made that the rooms of the professors directly overview this entrance. The researcher entrance, at the same time, is on the ‘backside’ seen from here and invisible from the main axis, emphasizing the difference in watcher and watched, as well as the difference between seeing and reaching, materializing simultaneously both hierarchies of symbolic power and surveillance (Colomina, 1996; Koch, 2010; Foucault, 1991). It is in place to note that this entrance being turned away from the main axis in part comes from it being turned towards the space shared with the administrative and library building and the student union, thus it is not only turned from something but also constituted a possible representative entrance from the main road for distinguished visitors. Curiously, the Chemistry building by volume distribution emphasizes the research activity towards the main axis, whereas other buildings tend to push forward the education volume and withdraw the research volume slightly.

**Figure 6.** Aerial photograph over Karolinska Institutet in 1960. The institution for Chemistry can be seen on the right-hand side of the entry to the area from the main road. Photograph: Oscar Bladh.

**THE RENEWAL**

During the 1960s, the Swedish university world was subject to radical changes. The number of student grew rapidly, as did the number of institutions, at the same time as the structure was aging. This expansion was an international phenomenon, within the medical field also coinciding with changes in the structures of
research financing. The result was a severe lack of facilities, both for research and for education (Caldenby, 1994, Bergström, 1970). The situation at Karolinska was extreme, and earlier savings as well as the permanent interiors contributed to making them difficult to adapt (Bylund, 1962). Following, starting with a conference on the theme “Planning and interior design of laboratories” in 1961, a new stage in the development of university campuses as well as Karolinska Institutet in Solna specifically began, as it from then on became based on a ‘structural philosophy’ aimed to make future buildings adaptable to changing needs (see Hidemark, 1962, 1965; Ahrbom, 1980). Part of this new philosophy was working through reports to guide future projects (Byggnadsstyrelsen, 1967a, 1967b), and a series of development projects such as the so-called “Laboratory Block” (today the Berzelius Laboratory) on Karolinska Institutet by Ove Hidemark and Göran Månsson. For this project an adaptable laboratory module that could and would be multiplied was developed (Hidemark, Månsson & Haller, 1972) and then combined into a single, large educational building, finally separating education and research into different architectural structures. This developed block also served as a basis for the continued development in the 1990s, when the Institute was reorganized to a small number of larger institutions as it had reached a point where its complexity had grown hard to grasp (Norrvig & Normark, 2008). In 1992, a parallel commission was made, where the winner, Bjurström & Brodin arkitekter, had also designed an extension to one of the existing laboratory buildings. In their proposal they refined this module, which was then applied in the Scheele Laboratory, awarding it the name “Scheelemodellen” (‘the Scheele model’) (Bjurström & Brodin, 1993; Ernberg & Normark, 2009), which was subsequently refined and used in a number of buildings [Figure 7] including the Retzius Laboratory, designed in 1998, and erected in 2001. A complex made as a free-standing unit of interconnected modular research facilities (offices and laboratories), the Retzius Laboratory had general solutions to staircases and entrances intended to facilitate informal meetings between research groups (see Bjurström & Brodin, 1993), and can be considered the ‘cleanest’ implementation of the module.
Thus, at this point the idea of ‘one subject-one building’ had been completely abandoned, changing the conditions for identity construction radically. While the principle was likely abandoned partly for ideological reasons – the idea of knowledge was changing rapidly during the years after the ‘establishment’ at Norbacka (Merton, 1973, Foucault, 2002a, 2002b; Latour & Woolgar, 1979) – pragmatic conditions further pushed the Institute to adapt to continuously changing conditions. The idea of a static set of subject-oriented buildings appeared as old-fashioned, in the same manner as maintaining educational facilities for each subject appeared as economically unviable. Education still had a central place on Campus, but was instead materialized in a large structure of its own. As a result the unity of research and education only existed in the large scale and was split up in the smaller scale, deemphasising integration them inbetween. While an important development in its own right, however, we will in the coming focus on the Retzius Laboratory and the connection between research units, configuration, and identity production.

The principle of the laboratory, as mentioned above, was repetition of modules – implying further potential expansion by further repetition. In this way, the idea of expansion from the original competition in 1936 still reside heavily in the solution, even if the connection between subject and building had been removed. The
Retzius Laboratory more takes the character of a flexible machine with exchangeable building modules, with exchangeable content, where the interface between parts describe research operations best conducted in more or less independent research teams of a particular size range (boundary: Wölflin, 1950; Koch, 2007).

The main carrier of identity thus becomes the individual module, roughly corresponding to the individual research team. Interestingly enough, the module is neither noticeably larger nor smaller than the size of the original research unit in Ryberg’s work in terms of the reasonable range of researchers in each unit.

This particular setup also means that in large, the ‘visitor’ is removed from the equation. That is, the strongest hierarchising relation, that between the students and the professor, is removed, and the remaining relations are between research units which, conceptually, are on the same hierarchical level – a challenge in its own right. Similarly, it can be argued that the strict hierarchies within academia were beginning to be loosened, at least in certain ways when it came to daily practice. The need for a spatial hierarchy to support an organizational idea of hierarchical relations was thus smaller. The Retzius Laboratory thus, in its organizational principle, grows towards a network, as compared to the tendencies towards series and trees of the earlier establishment [Figure 8] (Foucault, 1997). In practice, however, the structure takes on a tree-like character, as the individual modules are accessible only to those belonging to that research unit, making potential passage through them more or less impossible.

On an overall level the Retzius Laboratory thus gives an impression of being less hierarchic and more flexible than the elder establishment. If this spatial organization corresponds to the social pattern in the inhabiting research units is hard to say; possibly one can say that social hierarchies become more dependent on the individuals working there and their internal relations, but this can even make them more present in daily practice as they then need to be upheld performatively rather than structurally (compare Castells, 2004; Butler, 2005). It also makes the individual her- or himself more important for the social structure.

In the elder establishment there was furthermore a clear order, where the professor’s personal laboratory was part of the identity; it was possible to personalize the laboratory both in form and content within the confines of the permanent interior. The new module provides a much more impersonal character with (commonly) laboratories situated on one side of a central corridor, and offices on the other; a solution supported by a slight dislocation of the corridor offering a wider space on one side than the other. The modern laboratory thus becomes a space shared by the research unit, that builds a common, shared identity with the laboratory work as unifying practice. It also makes the question of the structure and identity of the research subject a material conversation between researchers in the arrangements of the laboratory, where it in the earlier structures – at least for the professor – could constitute a personal interpretation (compare Fors, 2006). Continuous needs for negotiations of organization both in time and space also makes the laboratory a source of social cement and conflict, but also an important shared facilities with the implications of shared ownership noted above (Miller, 1998a, 1998b; Markus, 1993; Koch, 2007)

This constitutes a shift in paradigm in the view of both the individual researchers contribution as of the research work as a whole: from having been tied to individual studies and brilliance research has developed into a collective, complex operation. The possibilities of personal interpretations have grown weaker. To a certain degree, this also coincides with the aim of flexibility and a world-view where researchers, and even research units, come and go rather than endure (compare: Amin & Cohendet, 2004).
Figure 8. The Retzius Laboratory, VGA integration (see Turner & Penn, 1999) analysis made in Depthmap (see Turner 2001). The analysis is performed with a significant exterior, which has been removed from the figure as seen here. Analysis and figure based on drawings by Bjurström & Brodin Arkitekter.
If this is the case, one can ask how the relations between research units look. The flexibility that is basis for the individual unit naturally puts constraints on their combination as well as on their individual measurements. Somewhat paradoxically, clear differences also appear between modules that internally are the same. As the modules are connected via staircases, which also work as main entrances to the building, certain modules become connected to two main staircases whereas others are connected only to one. Some become potential passages, with double entry conditions, whereas others become more distinctly oriented in one direction and thus provide a more clear hierarchy in relation to potential movement patterns.

The foremost contact between research units is thus intended to be the staircases. Already during the design there were hopes that the staircases would contribute to spontaneous and creative meetings between researchers, and there are reasons to here compare to the analysis of the atrium of the Chemistry building. The staircases in the Retzius Laboratory are predominantly designed to facilitate movement to and from individual research modules, and thus not meant for movements within the individual research unit, nor between modules. The time spent in the staircases is thus minimal, and the possibilities of encounters is minimized, even if a large percentage of movements in the overall structure (movements outside of the individual unit) takes place within them. Time spent, if encounters do happen, is also minimized as a result of the functional design minimizing distance and, to a certain extent, exposure to one another. Processes of producing recognition and communality that can be argued for in the Chemistry building thus have less potential in the Retzius laboratory, as the conditions for low intensity interaction is smaller, in the prolonging weakening the potential for more involved interaction (compare: Hägerstrand, Carlestad & Sollbe, 1991; Massey, 2005; Mattsson, 2006). In spite of their strategic location, thus, the staircases are unlikely to provide a large contribution to interaction between research groups by and large because of structural conditions of the modular arrangement, further strengthened by the boundary conditions established thereby. Furthermore, this shared space between research groups is shared outside of the research activity – you enter the staircase when you exit your research environment – whereas the atrium in the Chemistry building to a larger extent is shared within the research activity – internal movements in the research unit takes place in it. Space shared outside of and inside research practice. This doubles back, however, as the Retzius solution incorporates the internal corridor in the arguably most common movement – between office and laboratory – whereas this movement did not pass through the atrium in the Chemistry building [Figure 9].

The Retzius Laboratory does have, however, something that separates it from the Chemistry building – a result of the spatial configuration rather than the design of any individual space: the small rooms connecting to the secondary staircases in the ‘end’ modules. These spaces, located in the end of the corridor are simultaneously easily visible from the entrance to the module, and provide a good overview (i.e. control) of the entire corridor. At the same time, their location metrically deep into the module and configuratively separate from the working practice, makes them suitable as meeting places – especially for socially ‘open’ meetings. They do not intervene with work, but also make those who are there easy to find and they can also easily see what goes on, who comes, and who leaves (compare: Koch, 2004). Corresponding spaces are configuratively speaking absent from the modules situated between staircases.

To a certain extent, these differences between modules characterizing the Retzius Laboratory can also be said to allow for a differentiation of inhabitance (see Marcus 2000; 2010). The strong separation can also be said to be a condition for flexibility – the more separated the modules, the more disparate activities can take place, and the easier it is to change and rebuild invididual modules. The disconnection can thus be seen as a condition for flexibility. The balance between shared spaces and common identity and recognition on the one hand, and flexibility and exchangeability on the other, thus becomes a question of spatial practice and
configurational definition, and an important strategic decision for the design of knowledge environments such as universities.

As an urban structure it can be noted, that the principle of self-sufficient units still is noticeable in the renewal, perhaps even emphasized. The interrelations between buildings are given less emphasis, even if many of the individual exterior spaces are carefully designed. Most notably, perhaps, is that the emerging campus of the late 1990s lacks a grand narrative; there is not a clear main axis or central space, and the ones with that tendency communicates something quite different as the original buildings have been remade into, predominantly, administrative buildings. What is communicated is instead a more labyrinthine structure with more segregated individual units. Similar to other environments in the second half of the 20th century, the environment provides little reason and opportunity to (routinely or accidentally) pass by structures which are not the aim of movement. While providing undisturbed exterior environments around research facilities like the Retzius Laboratory, it also provides a range of problems when it comes to integration between units, which is assigned to one or two scales in total (locally in staircases and globally in the campus canteen). Providing a richer range of meeting places, reaching across more scales and situations, seems to be another strategic potential for the campus’ future development.

\[ \text{Figure 9. Comparing the identity units of the old Chemistry configuration and the Retzius configuration, with (P) for the persons, (O) for Offices, (L) for Laboratories, (N) for neutral Space and (E) for Exit. We can see how the neutral space is territorialized within the work going back and forth between lab and office in Retzius, whereas it is left outside of this process in the Chemistry building, leading to quite a different identity both of laboratory, work, and the neutral space itself.} \]

\section*{CONCLUSION}

This study, in its simplicity, points to how differently concepts such as flexibility and adaptivity can be realized, and how solutions vary over time; it can be argued that atrium-like solutions are once more topical in many situations including research environments – often in a similar way as in the Chemistry building, with similar arguments of supporting communication. What comes out of this analysis, however, is a clearer
picture of the importance to define flexibility of what and for whom, as the answer likely would lead towards one of the solutions discussed herein. It also shows subsequent consequences to identity and identity production within the resulting structures which need to be taken into account. It does this in a humble way still, rather presenting a line of argument to be further fleshed out and supported by further studies, but still consistently rooted in its empirical examples. Through this it also indirectly begins to elaborate on the concept of meeting places, and how different solutions provide opportunity and support for different kinds of meetings that arguably are all relevant. This is a question, however, to further develop in coming projects.

ACKNOWLEDGEMENTS

The research behind this paper was funded by Akademiska Hus, who also published the book *KI Arkitektur och kunskapsmiljö* (by the paper authors). The production of this book was a gift to Karolinska institutet in their 200-year celebration in 2010. Throughout the work, Akademiska Hus has been very engaged and supportive. The authors would also like to thank Olof Ljungström and Daniel Normark at Karolinska institutet for valuable input and information from witness seminars held in preparation to the 200 year jubilee, which have greatly contributed to the research also in this project.

REFERENCES


