

Chapter 6

T H E O R Y



RESEARCH / CONJECTURE / SUPPOSITION / SPECULATION



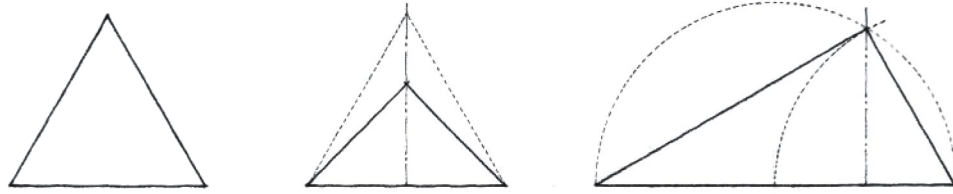


"Life has always seemed to me like a plant that lives on its rhizome. Its true life is invisible, hidden in the rhizome. The part that appears above ground lasts only a single summer. Then it withers away—an ephemeral apparition. When we think of the unending growth and decay of life and civilizations, we cannot escape the impression of absolute nullity. Yet I have never lost a sense of something that lives and endures underneath the eternal flux. What we see is the blossom, which passes. The rhizome remains."

- C.G. Jung



6.1 INTRODUCTION



The necessity of an investigation into the adaptability of architecture for this research document is two-fold. Firstly, its basis lies in the overall theoretical premise of time and change as a constant condition of life and how architecture, as a fixed element in the landscape, is inconsistent with this condition. Secondly, this concept of absolute adaptability is particularly emphasised (rendered important) by the programme of a T.E.L. (Technology-Enabled-Learning) centre, which is once more two-fold in its basis for adaptability: firstly as educational theorists point out that the learner needs to be in full spatial control of his personalised T.E.L. environment (as explained in Chapter 4), but also, that the T.E.L. technologies themselves change at an accelerating rate and the architecture needs to be able to accommodate this change.

This section is therefore an investigation into the adaptability of architecture. It starts out with notes on some architectural theorists who have researched this subject, and after each theory follows a discussion on how these theories are applied to the T.E.L. Centre. Then the different elements of the design product are investigated with regard to permanence and change - indicating varying degrees of adaptability for each element. The theorists referred to in this section include Dutch architect Herman Hertzberger, American writer Stewart Brand and Joshua Prince-Ramus of OMA New York.

6.2 Herman Hertzberger: 'POLYVALENCE'

6.3 Stewart brand's 'SHEARING LAYERS'

6.4 Joshua Prince-Ramus: 'COMPARTMENTALISED FLEXIBILITY'

6.5 PERSONALIZED LEARNING ENVIRONMENTS: TOWARDS SPATIAL TRANSFORMABILITY

6.6 CONCLUSION

6 . 2 H E R M A N H E R T Z B E R G E R : ‘ P O L Y V A L E N C E ’

In a discussion on the topic of adaptable spatial strategies in an increasingly changing environment, Herman Hertzberger (2014: 108) states the following:

“That need to have everything under control fosters the compulsion to find lasting solutions for each component, which in turn leads to a fully crystallised outcome appropriate to some fictional static final state where everything is arranged for eternity; that is, where everything is hermetically defined, provided with a fixed meaning, an enclosed world devoid of freedom and change. As long as this illusion persists, more buildings will soon prove to be unusable and past their prime, condemned to an increasingly short useful life.”

Instead of providing a user with completely open-ended, generic space, which, Hertzberger (2014:109) explains is devoid of all meaning and identity, he introduces the concept of *polyvalence*, or *polyvalent space*, defined by him as a **spatial competence** that can “generate specific responses to each new situation”, that is “able to handle unexpected applications” and “take up ever-new content and still remain itself: inclusiveness as a structure open to interpretation” (2014: 112). He (2014: 113) contrasts the freedom and reduction (“leaving out as much as possible”) of generic space to the concentration and addition of as many place-making potentials as possible to increase the spatial quality of polyvalence. Additionally (2014: 113) he states that “architects must provide, independently of changing designations, not neutral buildings, but buildings with character, explicit, recognisable, authentic, original yet without imposing a particular taste and without deriving their characteristics from the function or designation.”

In order to arrive at this idea of what polyvalent space is (or should be), Hertzberger (2014: 112) advises that architects need to look back in history and see what spatial qualities keep recurring, “albeit in ever new forms from which we can assume that they have played a key role for people everywhere and of all times and therefore possess a greater significance”; he includes a few of these ‘recurring themes’ as the “spatial means of apportioning enclosure and views, light and dark” and of “emphasising ‘linger power’”. Similar to Brand (1995: 59) (6.3), Hertzberger (2014: 113) advises against over-specific and over-expressive forms and fabrications and states that we should rather seek to “distil the essence without lapsing into too explicit a response”.

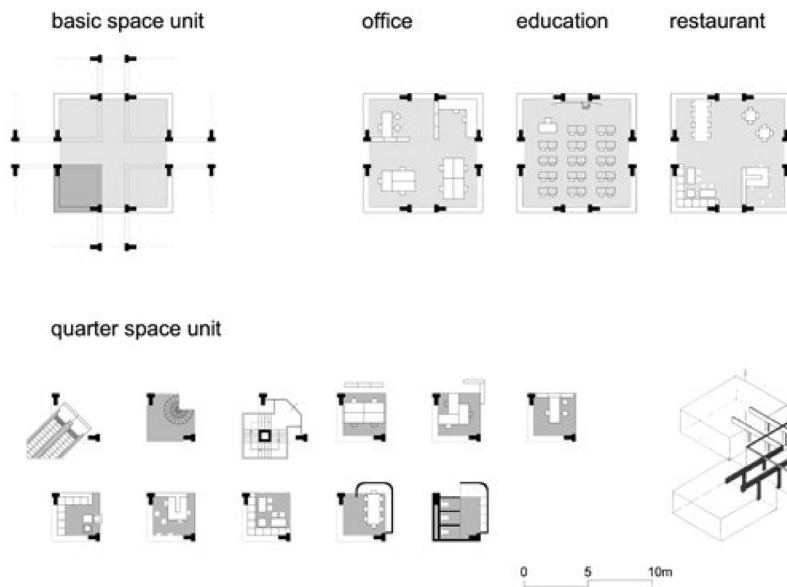


Figure 6.1: Case study on adaptability of space - Centraal Beheer Apeldoorn, The Netherlands, Architectuurstudio HH, 1972: maximised dialogue & connection throughout building on plan and section + modular design of plan layout is adaptable to many functions. (Derix and Izaki, 2014: 110)

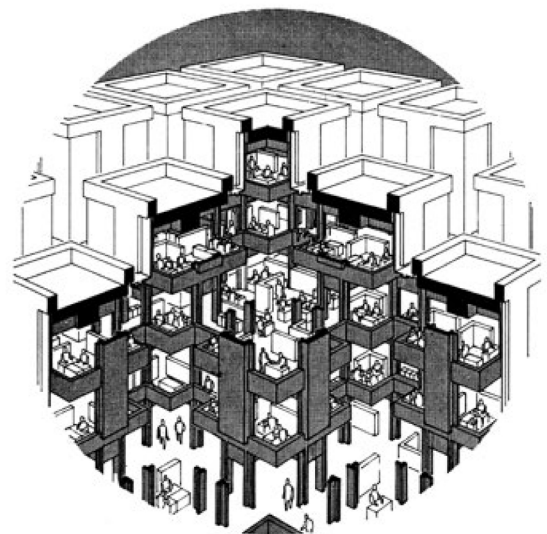
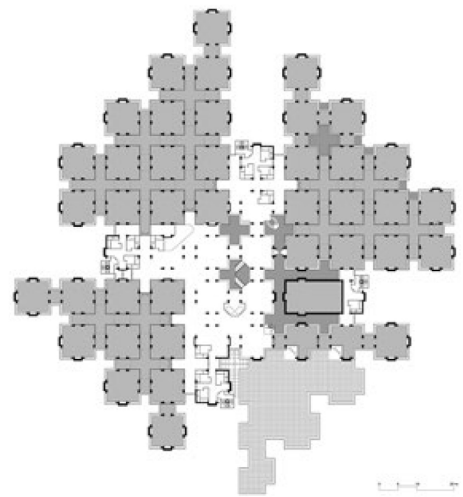
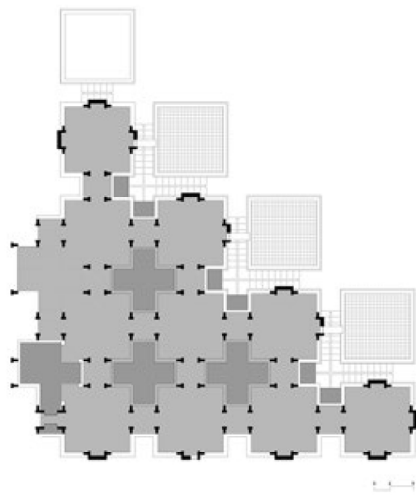




Figure 6.2: Centraal Beheer Apeldoorn (1968-72) by Herman Hertzberger (Aviodrome Luchtfotografie)

The design-principles of flexibility and maximised human-interaction and dialogue throughout the building are successfully prevalent in the modular design of Centraal Beheer Apeldoorn (Fig 6.2); it also provides flexibility in terms of furniture layout for different usage-scenarios. However, in terms of the overall design, the structure is fairly rigid and the maximum module to house a large group of people is still only a 9m x 9m square shape. The building accommodates its educational facility fairly well but any other programme (or any other educational programme) would still have to conform to that square size space. Perhaps a degree of variability in the layout structure would allow for a wider range of uses and render the building more resilient throughout changes in its future use. This document therefore argues for a building with various degrees of spatial adaptability beyond just furniture layout.

6.3 Stewart brand's 'SHEARING LAYERS'

In *How Buildings Learn: What happens after they're built*, Stewart Brand (2012) states that all buildings "keep on growing" and that the thing which makes the difference in whether they grow in a better direction or a worse one, is their *ability to adapt*. Brand (2012) emphasises that city buildings especially, "are constantly forced to regenerate themselves to suit new uses"; he states (2012) that a *learning building* is one that is "constantly improved and refined" and that even the best buildings have to be "refreshed and challenged from time to time" to keep them from becoming a 'beautiful corpse'.

In order to achieve this, Brand (1995: 178) introduces the concept of *scenario planning*; which is a foresight methodology (not future predictions) in order to arrive at an idea about what plausible futures might look like for the building. Through this process, basic plot lines are established on a scale of more realistic to more shocking (1995: 181); thereafter common threads are sought

through these scenarios. He advises not to be too specific about user's needs, or to think short term. Furthermore he states (1995: 186) that one should "favour moves that increase options" and to "shy from moves that end well but require cutting off choices". More specifically Brand recommends having **excessive structural and service capacity** and using **shapes and materials that can grow or be altered easily** (Fig 6.3). This suggests a modular, organic approach to massing and form-making; an architecture to which one could add or subtract later on without destroying the entire architectural intent - additions should not look like add-ons for instance.

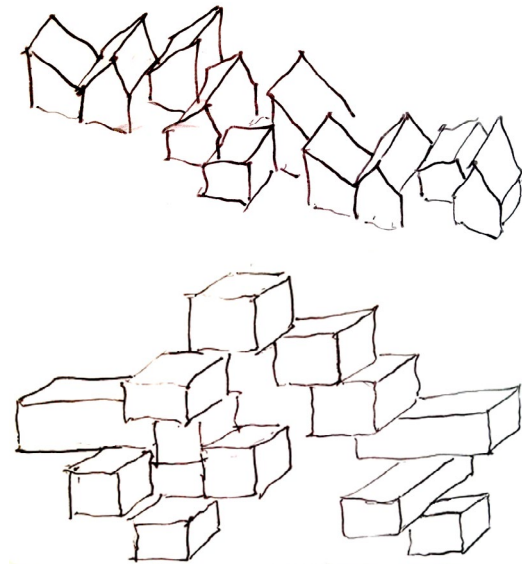


Figure 6.3: Organic composition of building-massing

Figure 6.4 illustrates the 'scenario-buffered-planning' approach applied to the T.E.L. Centre. The typologies chosen are based on existing conversion models that are currently taking place in the CBD context (existing buildings being converted to housing, retail or offices etc.); besides this, the scenarios are informed by what other programmes would work or are necessary in that context. On the more 'plausible' side of the scale, a common thread that can be identified is a modular spatial

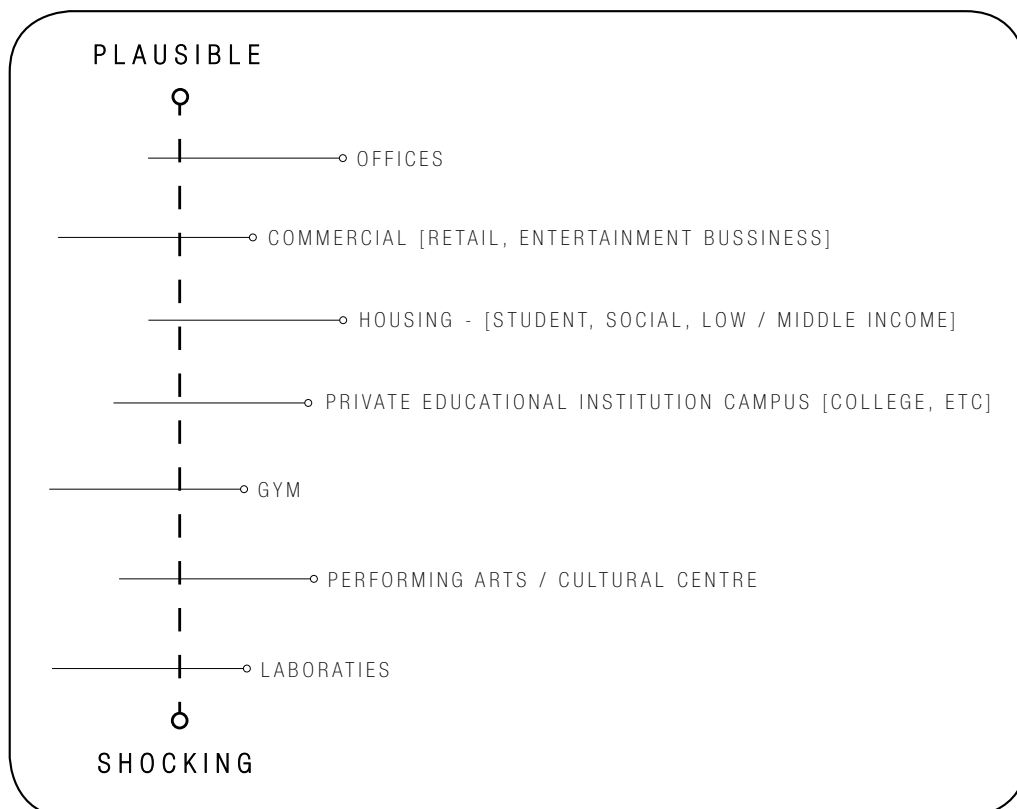


Figure 6.4: 'Scenario-buffered-planning' approach for T.E.L. Centre

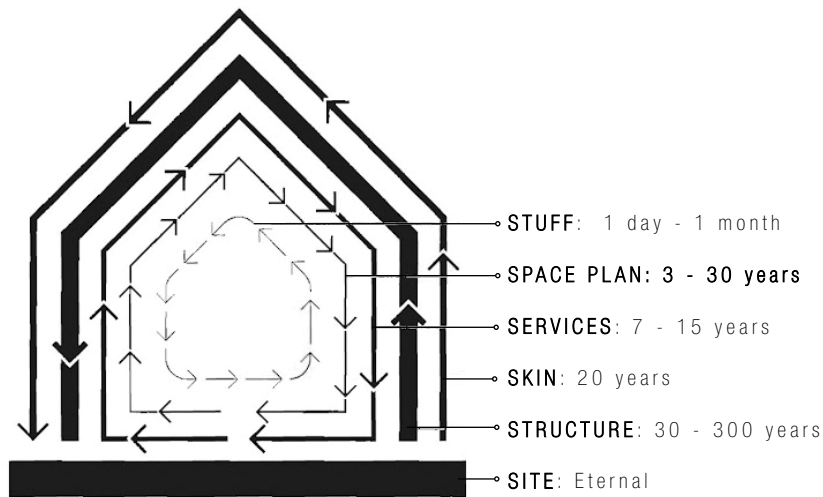


Figure 6.5: Stewart Brand's 'Shearing layers' that make up a building (Brand, 1995: 13)

approach in terms of scale; whereas to the more 'shocking' side, larger open spaces may rather be required. Besides this, other identified 'threads' include good ventilation and good public access, as well as general good building strategies namely dialogue and interaction throughout the building as well as being in close contact with natural elements. Another important design consideration to take into account in the spirit of future change is sub-division of the building (especially for housing, offices and for retail) - in which case numerous service cores will be necessary; even if the initial design does not supply these extra services, it should not restrict the strategic additions of them later on in the building.

In section 2.1 the various "human compromisers of technological advancement" are highlighted as negative by-products of perpetual modernity, thereafter the various ways in which architecture can counter them were discussed. As illustrated in Figure 2.17, these 'counter-strategies' should be permanent 'fixtures' in the building, as they constitute things that need to persist throughout time and change for optimal human health and behaviour.

Conversely, the technological attributes that aid the programmatic and public, or urban intentions (school as city and city as school - specifically referring to the interactive, digital environments) should be open-ended, 'alterable' elements, as they are rapidly-advancing elements and their application should be easily alterable through time. Brand's diagram indicates the life-span for overall services to be 7 - 15 years; in this case, however, where the building's programme is a T.E.L. Centre, the digital, virtual and electronic technologies might change even faster than that, whereas the other services in the building can be expected to fall into his description.

The background theory discussed in Chapter 2 as well as Brand's theory of a building's *shearing layers* (1995: 13) - which indicates a life-span for each of the main components that make up a building (Figure 6.5) - are used as a guiding tool to investigate the following building and design elements of the T.E.L. Centre in relation to their respective life-span and replaceability:

- 1.) SITE (Eternal)
- 2.) STRUCTURE (30 - 300 years)
- 3.) 'SOCIABILITY' OF BUILDING (Permanent)
- 4.) CLOSE CONNECTION TO NATURE (Permanent)
- 5.) SLOWNESS OF CITY PACE (manipulating city pace with soft ground floor edges- Permanent)
- 6.) IDENTITY & ARCHITECTURAL LANGUAGE (Mediative through time)
- 7.) SKIN (20 years - Brand, 2012)
- 8.) SERVICES (7-15 years - Brand, 2012) (In this case perhaps faster, as will be explained)
- 9.) USE (Programmatic function)
 - Space layout plan (3- 30 years - Brand, 2012)
 - Size & shape of interior spaces
 - Privacy control
 - Daylighting control (in terms of digital programmes)

6.4 Joshua Prince-Ramus: “COMPARTMENTALISED FLEXIBILITY”

In line with Hertzberger’s favouring polyvalent space to generic space, OMA New York architect, Joshua Prince-Ramus (2006) challenges the ideals of high-modernist flexibility which sought to produce completely open-ended spaces in which absolutely anything could happen, but which subsequently resulted in very generic buildings that all looked the same and in which every interior space functioned in the same way, thereby subverting their original intention. He also states

that these generic spaces get completely dominated by the most immediate need and “imposes itself on all the other functions”. Instead, Prince-Ramus (2006) advocates what he calls ‘*compartmentalised flexibility*’, in which a building houses certain fixed programmes which are intertwined with other open-ended areas. An example to illustrate this principle is their Seattle Public Library (Figure 6.8), in which the necessary library programmes are stacked in five primary platforms (hq, book-spiral, meeting, staff and parking), but on top of each of these is an open-ended, un-programmed ‘grey’ social area (reading room, mixing chamber, living room and kids) of which the use or spatial arrangement may change over time.

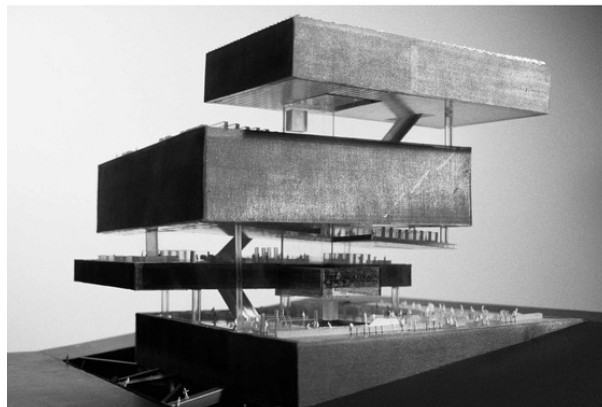
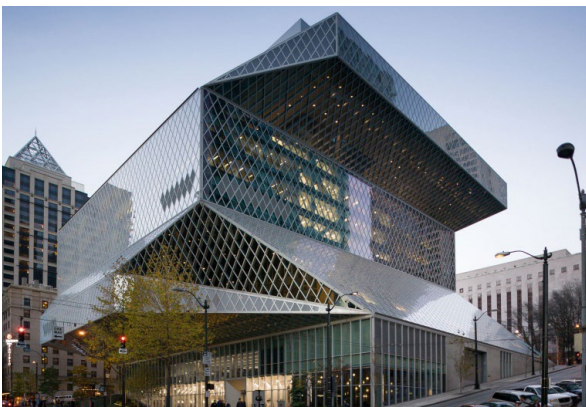
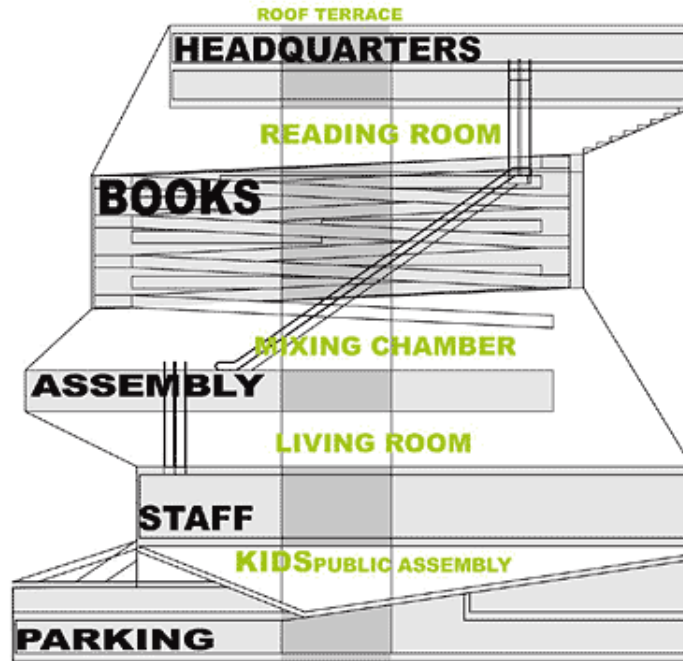


Figure 6.6: Seattle Library by REX (then OMA New York) (Rex, 2015)



In addition to this, Joshua Prince-Ramus (2009) advocates what he calls 'architectural agency', in which architecture does things instead of just representing things; he calls it "the lost art of productively losing control" (2009) in which one does not know what the end result will be. An example that he uses to illustrate this concept is the Wily Theatre in Dallas which they designed as a "theatrical machine" that reconfigures itself in order to accommodate a number of activities or performance types (as illustrated in Figure 6.7). Specifically, they altered the conventional 'back of house' and 'front of house' to above and below house, which opened up the entire ground floor perimeter. Prince-Ramus states that the project intentions were that this type of reconfiguring should be able to occur "at the touch of a button" (2009); but, whether due to budget-constraints or a lack of technology, the end product requires manual labour to transform. Still, the intentions of architecture as agency, are there.

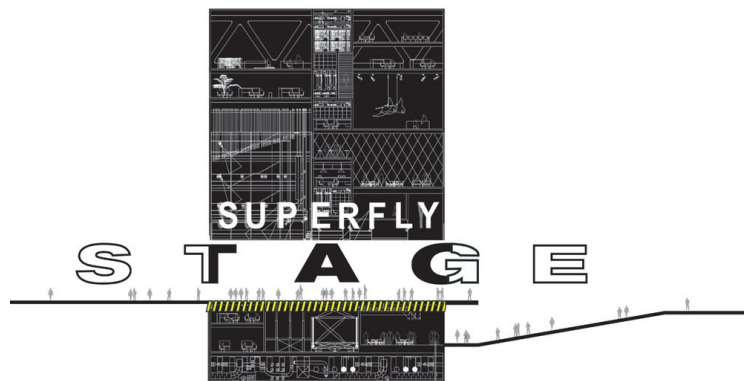
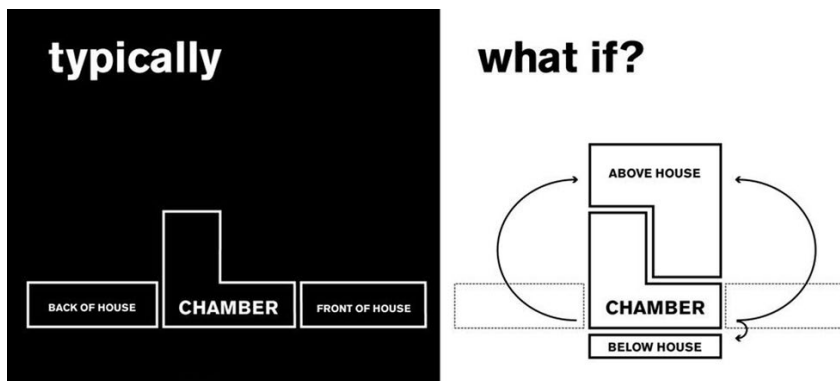
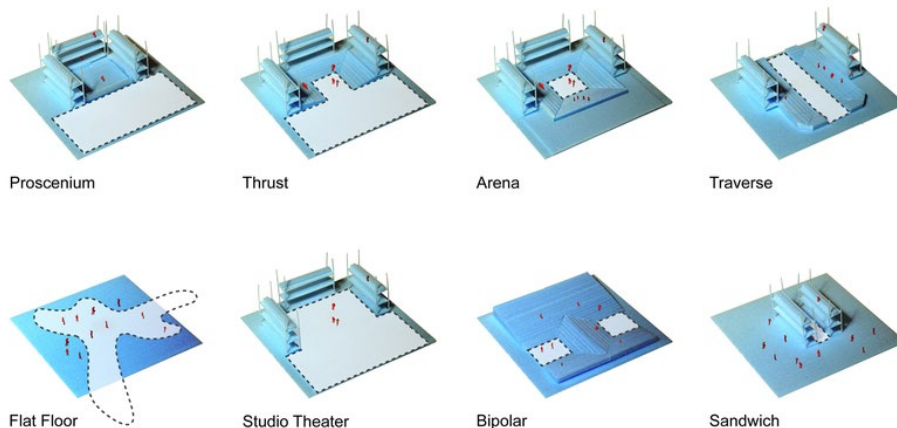


Figure 6.7: Wily theatre concepts in Dallas, designed by Rex in 2009



6.5 PERSONALIZED LEARNING ENVIRONMENTS:

- TOWARDS SPATIAL TRANSFORMABILITY -

In light of the theory discussed in Chapter 5, section 5.6.2, on the importance of spatial adjustability for personalized learning environments, this section is an exploration of certain spatial strategies that encompass this theory.

The spatial adaptability design considerations will range from the following aspects:

- Scale (rooms should be able to open up and grow to accommodate bigger groups/functions)
- Adaptable spatial arrangements in terms of furniture and room layout
- Control over daylighting quality

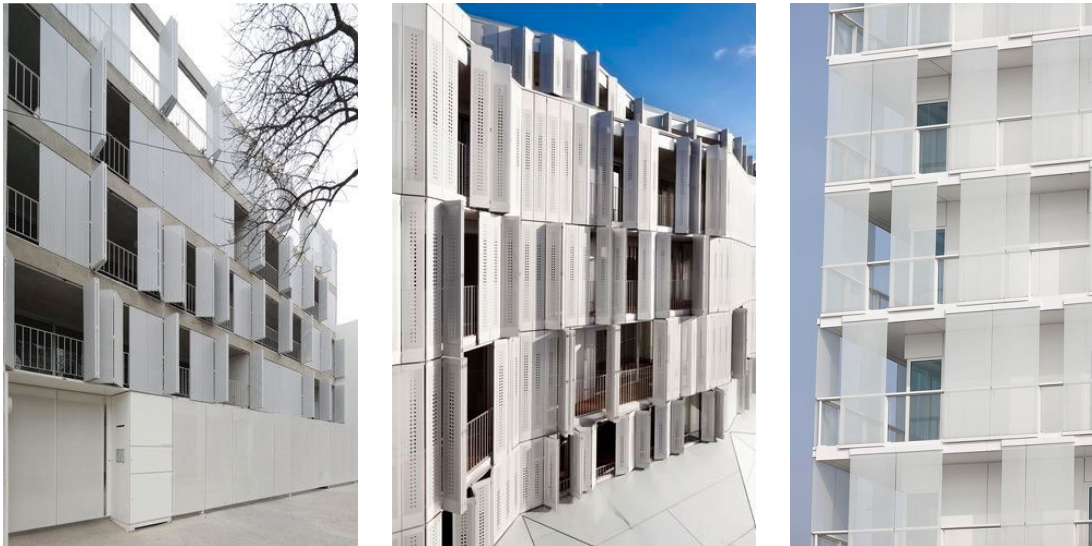


Figure 6.8: Adjustable exterior screening

- Control over visibility from and to other learners
- Digital display screening in which learning content changes - can also change by input from the learner himself

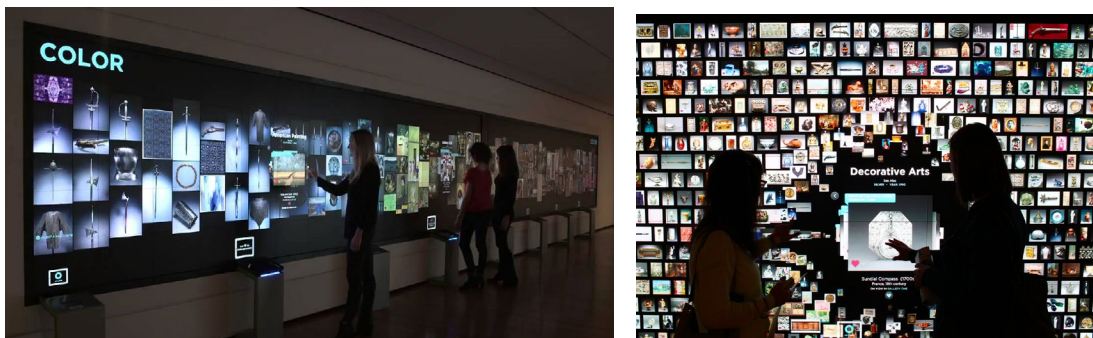


Figure 6.9: Interactive digital learning displays

6 . 6 C O N C L U S I O N

In conclusion of the theory-chapter on *alterability*, this chapter was an investigation on the varying degrees of adjustability for buildings in general, and more specifically it highlighted the spatial strategies on alterability for personalized learning environments. This project aims to achieve a more durable architecture - not by merely relying on robust materials but by its ability to absorb change and accommodate numerous spatial applications.

