



7

DESIGN DEVELOPMENT

7.1 User Requirements

Table 7.1 Assessment of user requirements

Space allocation	Design requirements	Technical requirements
Display galleries	Architecture should indicate the narrative of the proposed program to the user. The display galleries should allow for spaces to ponder and interpret the intervention.	Lighting, much of which is intended to be obtained by means of controlled natural illumination should be integrated into the design. Displays should be integrates in such a way that human ergonomics is used as point of reference for the execution of the design
Entrance	The entrance should be clearly articulated and the hierarchy of the existing structure must be respected in this regard.	Clear signage, access for the lesser abled, Entrance to the building should provide separate service entries, providing separate access for students and medical professionals
Storage	Storage should be kept separate from the workings of the existing display,	product storage should be provided, Cold storage, as per the requirements by law
Preparation facilities	Separate access with the opportunity to observe the anatomical dissection by students or health professionals	Facilites to be provided to produce wet samples as well as plastinated samples
Multi media space	A space with the ability to accommodate a range of visitors, from tour groups to individuals	opportunities for projection, seating, dimmable lighting, connection to the flow of the gallery

It has been established that the Human Anatomy Centre will house samples with both educational value that can be accessible to the public as informative material, but the centre will also house the functional characteristics required to fulfil a medical orientated function. The focus of the latter pertains to the academic realm and is therefore focussed toward medical professionals. The intention of distinguishing between the two is to protect the non-academic user from unwanted exposure to sensitive material, and similarly this notion would provide the academic user with realistic medical samples (i.e. not manipulated to be suitable for sensitive viewers). In order to accommodate both an academic and non-academic programmes together with varying levels of interaction, the entrances into the building has been separated in order to signify an academic and non-academic route. The academic entrance is located on the East facade of the building in close proximity to the proposed staff parking lot. This new entrance allows for rapid progress toward the anatomical facilities in the building. The non-academic user enters the building from the South via the existing main entrance. The route takes the user past the security desk onto a ticket sales point. Each user receives a bar code that will be recognised by the information station. On this barcode the visitor's age is recognised. Access is obtained by scanning the barcode when moving between different information zones. A juvenile visitor could therefore not have access to restricted areas only accessible to users over the age of sixteen. In such an instances access would be denied and the user has to progress to the next appropriate venue. It is also proposed that the adult user be able to select varying degrees of exposure to sensitive material. This selection will be accommodated when the bar code is purchased. Three routes with different levels of sensitivity will be proposed and the user has the option to select one that meets its own requirements.

Access will be granted to the academic visitor in the form of a conventional access pass. The academic user will have access to all the specimens on display. This includes the specimens on display in both the academic and non-academic areas.

The intention with the distinction between different users and their access points and routes is not intended to create an exclusive distinction between different users. The proposed outcome is to accommodate vastly different uses within one setting. Table 7.1 indicates the user requirements associated with different functional venues in the building. These findings and requirements acted as design generators for the development of a design concept.

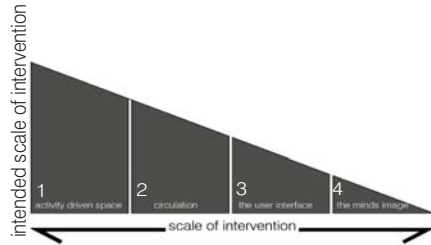
7.2 Manifestation of Theory into Design

1. Activity driven space

The aim is to rejuvenate the social image of the hospital by involving the visitor for the duration of the visit to The Human Anatomy Centre. Allowing for activity driven space will provoke interest in The Human Anatomy Centre. The measuring device that determines the vital statistics of each user and the subsequent comparison of this acquired information to samples on display, involves the user in the process and provide the opportunity to develop an awareness of the human body. The notion of activity driven space is addressed in the interior realm, but not exclusively so, as the removal of the existing palisade fencing, combined with the introduction of outside green spaces juxtaposed to the entrance of The Human Anatomy Centre signifies activity on a visual level to the passerby. This notion symbolises activity, and is intended to renew public interest to the building.

3. The user interface

The design of the immediate interface between the user and architecture is explored on two levels: First the relationship of the object or information source is seen as an entity in space with immediate static properties. The user should therefore be able to move around such displays and create distance from the display if required. Secondly the design addresses the personal experience between the user and the object. The intention is to provide the user with the opportunity to access detailed information on the displays at hand. The use of technology in this instance provides the user with a vast array of different information sources, narrated in such a way that it becomes immediately applicable to the samples at hand. The location of display information together with its legibility and the access to relevant information, served as the key generator in the design



2. Circulation

As discussed in chapter 3 the manipulation of circulation routes has the potential to allow varying degrees of choice to the user. In the instance of the Human Anatomy Centre the reinterpretation of the existing movement sequences provide the user with the opportunity to engage with sensitive materials on a level he/she is comfortable with. The alteration of the interior of the building combined with the subsequent intervention alters the building's structure and the in order to accommodate a completely new programme.

4. Mind's image

Differing levels of exposure to sensitive subject material, insinuates a gradual introduction to more sensitive material over time or different visits in this instance. The aim is therefore to leave the user with something that will allow a possible return for later investigation. The design addresses these elements by constantly altering elements in the building on a regular basis. Certain venues within the building therefore become adaptable to remain current in the displays it houses. The direct comparison between the user and the sample on display provides the user with information on the human body. The dynamic nature of this information becomes evident when elements like advances in medicine, a change in an individual's physiology or a renewed awareness of the human body may leave the user a new set of questions. It is in these instances that The Human Anatomy Centre can provide the user with valuable information by being adaptable to new display material and the subsequent information associated with it.

Diagram 7.1 Development from theory to form – the setting out of design parameters

7.3 Conceptual Development

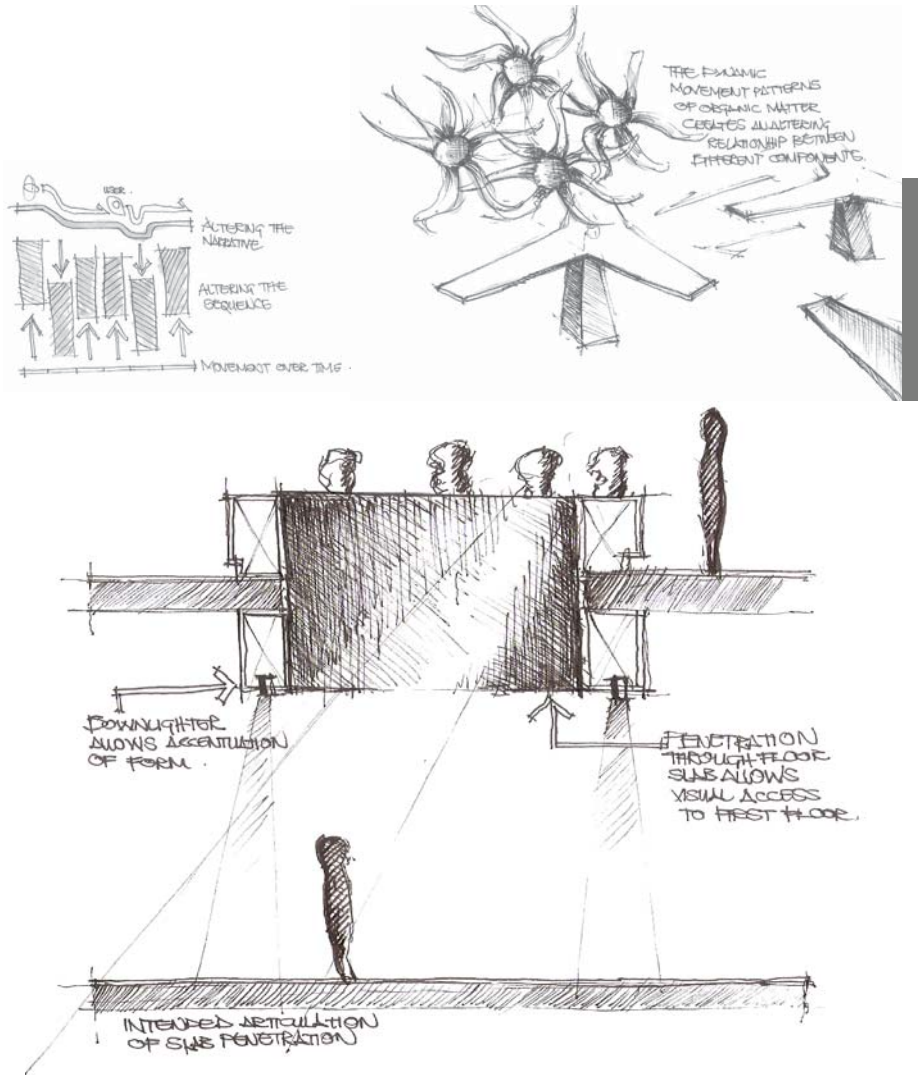


Illustration 7.1 Strategic design development engaging the user through activity driven space

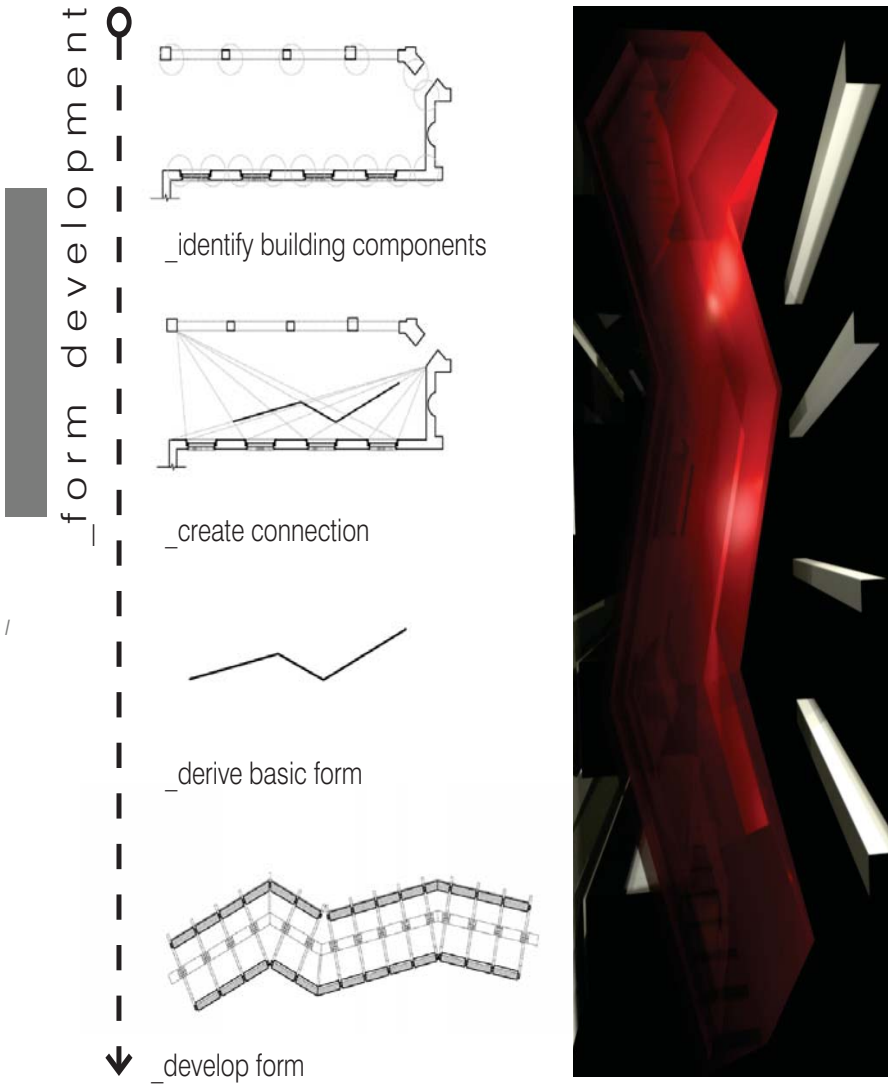


Diagram 7.2 The generation of form by establishing new relationships between building elements

7.3.1 Form

Prof. J.N.L. Durand, architect and theorist at the Ecole Polytechnique (1795-1830) alluded to the principle of decomposition of architectural form (Righini, 2000: 183). By visually placing typical classical building elements within a structural grid or along alternative axis, Durand (*ibid.*) concludes that it was possible to develop an array of varying compositions by the implementation of this approach.

Scott (2005:150) also suggests that inspiration for the envisioned intervention may be derived from the existing built fabric. His theory, however, suggests a more intuitive and creative approach than merely moving building elements along a grid. He (*ibid.*) argues that dissecting the architectural envelope to expose the value of its individual components activates the possibility to establish new relationships between individual components. The genesis of form in the design of the intervention is informed by a similar approach. This involves the reinterpretation of the existing classical grid in order to generate new form.

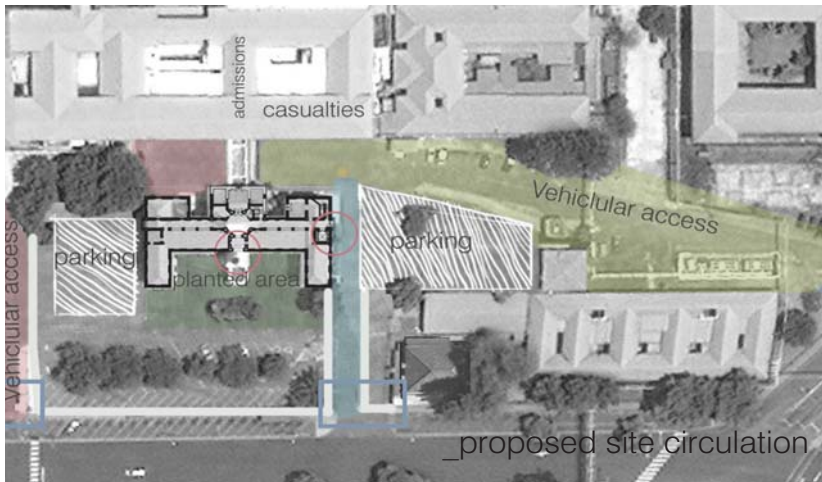
The relationship of the new form in relation to the existing has the ability to have a detrimental effect on the existing. Scott (2005:101) aims to grasp this dynamic relationship between architectural geometry and materiality to that of the ruin. His findings,aim to highlight four generic approaches.

Both materiality and form should contrast the existing architectural envelope in this study. The design is aimed toward questioning the predictability of the classical grid's relevance to the envisioned programme and intended function of the space. The aim of The Human Anatomy Centre is to provoke and discover. It seems inevitable that both form and materiality express this intention.

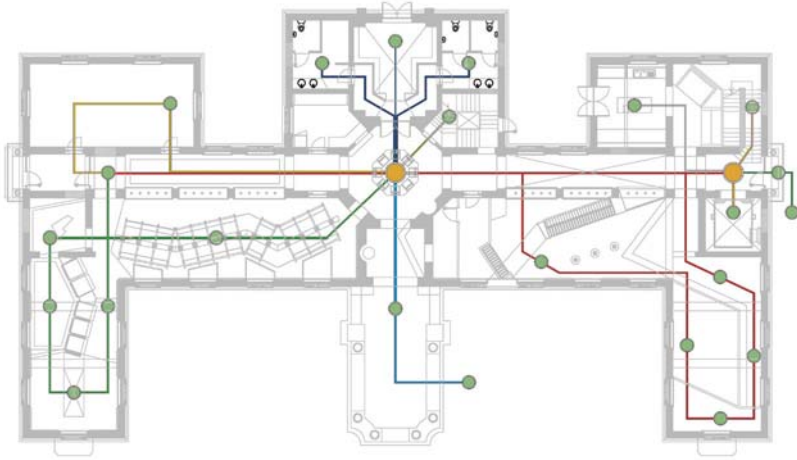
_ site development



_ current site circulation



7.3.2 Movement





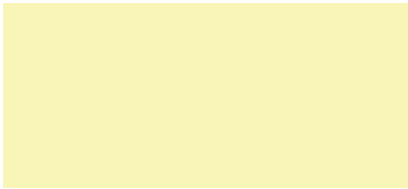
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sympathetic towards existing in form and material



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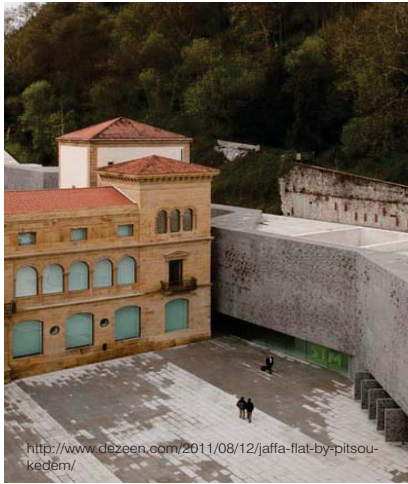
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Illustrations 7.2 The relationship between the new and the existing architectural fabric with specific emphasis on geometric form and materiality

7.3.3 Colour

7.3.3.1 Basic colour theory

The colours perceived by our eyes are a reflection of a selected spectrum of visible light. This implies that red, for example, reflects only the red spectra in light while it absorbs all other colours. In order to develop and create new colours, there are three models used, depending on the application at hand. These models are:

RGB – Mainly used for light creation

CMYK – A model mainly used in the printing industry

Hexadecimal – For computer and web design applications

Designers should be aware of the significance and applications of each of these models. One of the reasons is that the colour perceived physically is RGB colour, but when this colour is formulated on the computer screen, it is perceived in hexadecimal colour up to the point where this work is printed, which point the colour is converted to the CMYK colour model. As a result, it can be argued that an understanding of each of these systems will allow the designer to ensure that the envisioned colour at the beginning of the printing process is the colour reflected when the design is concluded on paper.

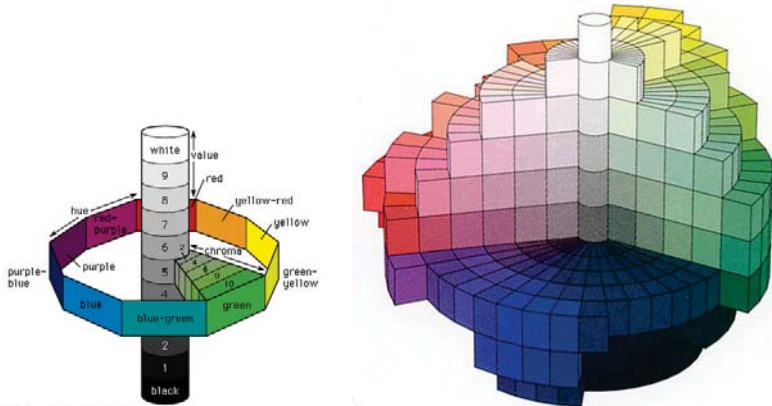
RGB

Red, green and blue makes up the components of the RGB model (Ormison & Robinson, 2007:20). If all three of the primary colours are added together, white light is formed. When red, green and blue are applied in varying quantities, colour is perceived. The principle of true colour should be explained, where values are allocated to each of the primary colours. These values range between 0 and 255. White would have a code of 255, 255, 255, whereas Cerulean Blue would have a code of 0 (Red), 123 (Green), 167 (Blue) (*ibid.*).

CMYK

Cyan, magenta, yellow and black (key) make up the primary colours in this colour model. If the above colours are added together, black is created. The colour value is communicated as a percentage of the primary colours present in the CMYK range. For instance, cyan would be 100 percent cyan whilst cinnamon would be indicated as follows - cyan: 16%; magenta: 60%; yellow: 82% and black: 51% (*ibid.*).

7.3.3.2 The colour wheel



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Diagram 7.5 Colour wheel as presented by Munsell <http://www.uwgb.edu/heuerc/2D/MunsellSolid.jpg>. http://4.bp.blogspot.com/_vHdM2yoeMIM/SaggUQZoJ9I/AAAAAAAAAD-I/oFVLW3I5h6Q/s400/munsell-sphere.jpg.

7.3.3.3 Significance of colour in a human anatomy centre

The use of colour in human anatomy is applied mostly in order to allow the user to be able to differentiate between the systems of the human body. The route of oxygen rich blood is usually depicted as red, while the route of oxygen poor blood is depicted as blue.

7.3.3.4 Developing a colour palette

As point of departure, blue and red are seen as the primary colours in human anatomy. These colours are primary colours in the RGB colour model and can be found on different sides of the colour wheel. Blue and red, however, are not directly complementary of each other. In an attempt to reinterpret red and blue, the principles of the split complement in colour and the double split complement in colour (as indicated in *Illustration 7.6*) Through

these processes the a basic colour palette was derived. This palette only represents the hue of different complementary colours, and as a result the colour wheel is used to create a hierarchy of colour by allowing for different levels of saturation. Accent, background and intermediate colours can therefore be distinguished in order to fulfil an array of colour needs. All colours cannot be communicated at the same intensity, and an intuitive hierarchy

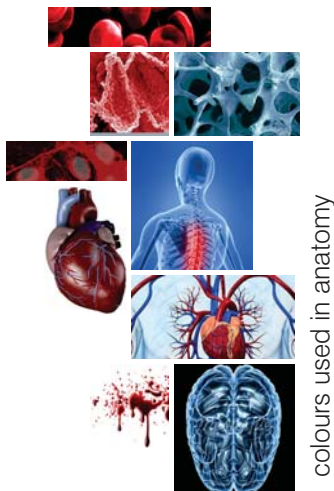


Diagram 7.6 Colour palette development

between colours in varying saturation levels addresses this challenge. The principle of utilising an accent colour to highlight specific visual information was derived from the field of human anatomy. Blue and red are therefore selected as the accent colours to fulfil this role. Background colours are chosen for their ability to reflect light and to develop an ambient mood. There should be distinguished between background colours and intermediate background colours:

Intermediate background colours are applied in this project in order to reduce the stark contrast between background and accent colours.

7.3.4 Light

7.3.4.1 Lighting and Mood

With the type of light source and the application determined, it is possible

to manipulate the mood in each space by altering the lighting direction and intensity used to illuminate each component.

7.3.5 Material

Formulating a new colour palette for the human anatomy gallery, the main consideration is to obtain materials that would not contest with the materials applied in the existing structure. The existing materials in the building will be evaluated and it will be determined which materials are more pertinent in the design than others .

The addition of new materials will be done to enhance the existing colour palette. The design approach in this instance involves expressing a specific material by accentuating the manipulation of joints, shaping and the manipulation of the material surface. Being synonymous with the Arts and Crafts movement, the Edwardian style emphasises the materiality of the interior environment. The design approach will extend this notion by respectfully reinterpreting this gesture.

The addition of any new materials to the existing materials palette will be rigorously analysed according to its technical attributes. The Human Anatomy Centre has varying material requirements, including basic fabricated joinery elements constructed from wooden board products. In contrast, the materiality requirements of the dissection theatres and display elements require a specialised material application in order to minimise damage to samples on display, but more importantly, to eliminate contamination. *Chapter 7* will therefore investigate the technical attributes of each new material selected.



Down lighting

The use of down lighting has the capacity to display stark shadows if hard light is used (Yot, 2010:23). The approach, therefore, is to always have some form of ambient diffused lighting used in collaboration with focussed down lighting in order to soften or eliminate the shadows that often occur as a result. Narrow beam angles are only used selectively in most down light applications. A wider beam angle is preferred in order to emit a softer perceived lighting quality.

Lighting from below

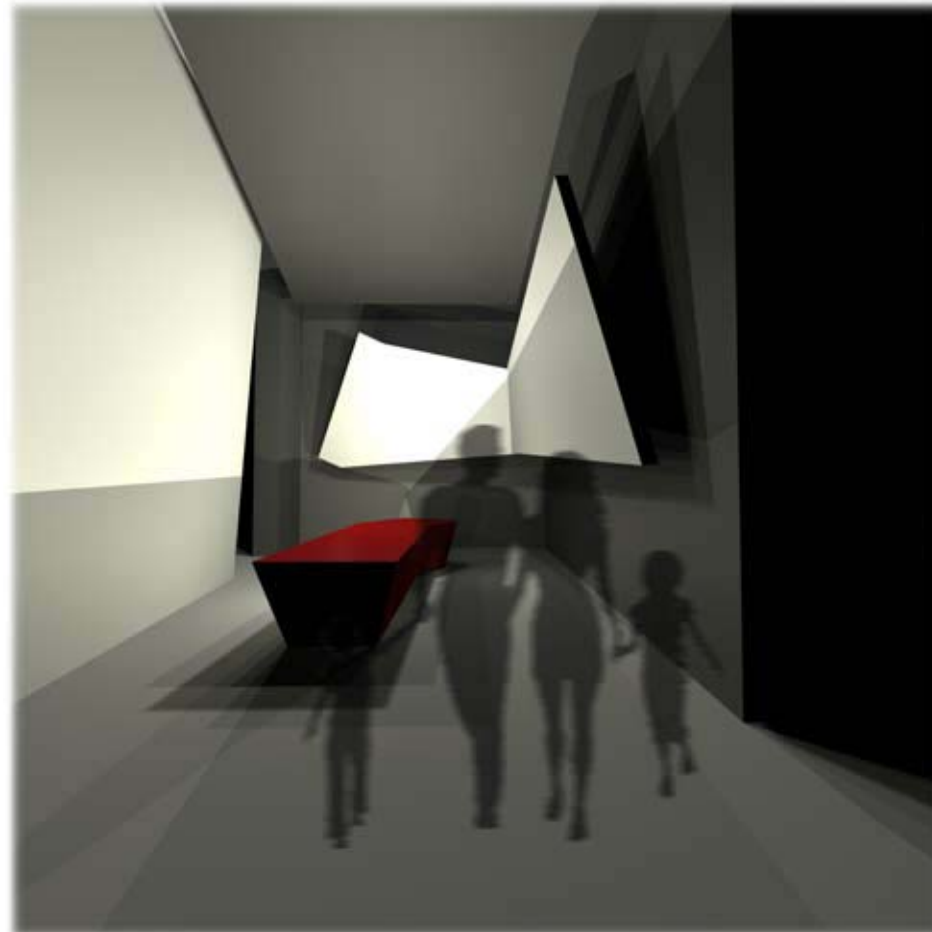
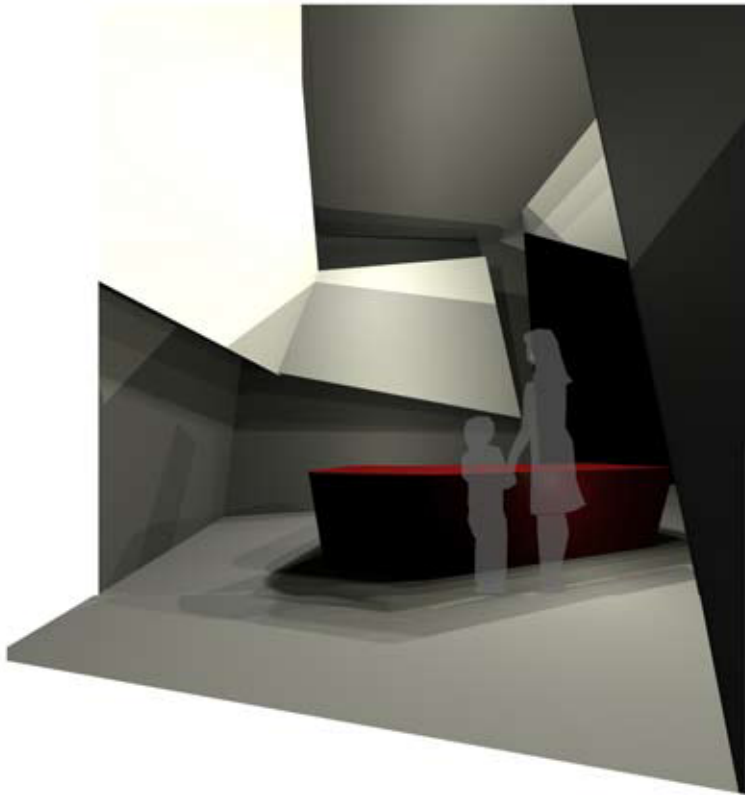
Lighting from below can be striking, so striking in the back that the application seldom truly justifies this application (Yot, 2010:24). When applied correctly, lighting from below has the ability to create a dramatic mood or atmosphere that is in contrast to the regular perception of how natural illumination would typically appear (*ibid*). It is for this reason that a series of up-lighter is specified to illuminate the arched structure of the east-west axis in the Human Anatomy Gallery building. This notion is also relevant in the light table display that allows the elements on display to seem esoteric in appearance.

Back lighting

Lighting from behind has the ability to accentuate the object displayed in front of it, as a silhouette. With specific emphasis on the texture present in the outline of a silhouette (*ibid.*), this approach is visible in the design the lighting diffuser placed within the window opening on order to accentuate to silhouette of elements displayed in front (see *Illustration 7.5*).

Illustration 7.3 Creating mood through light

7.4 Final Intervention Proposal

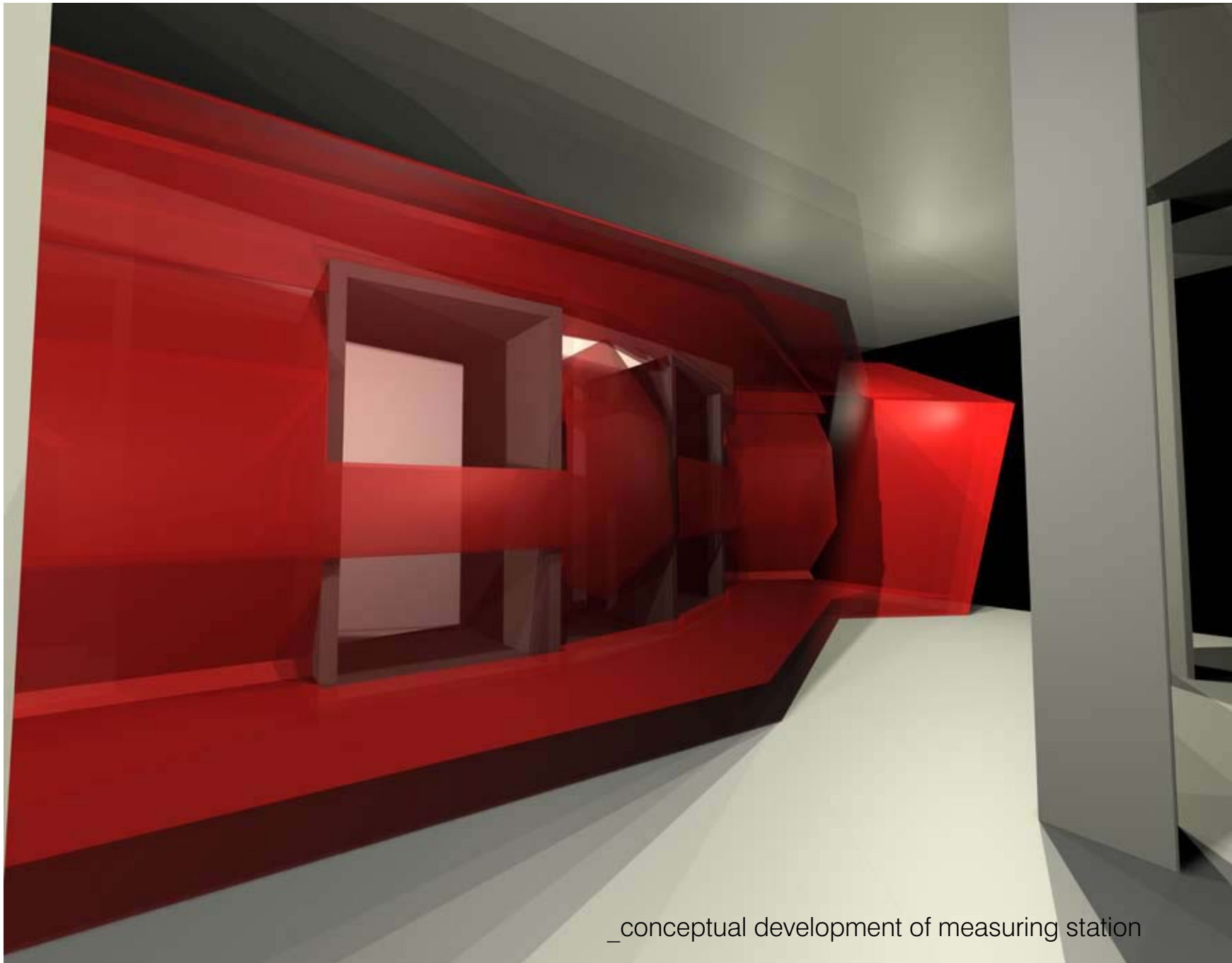


_typical multi media room

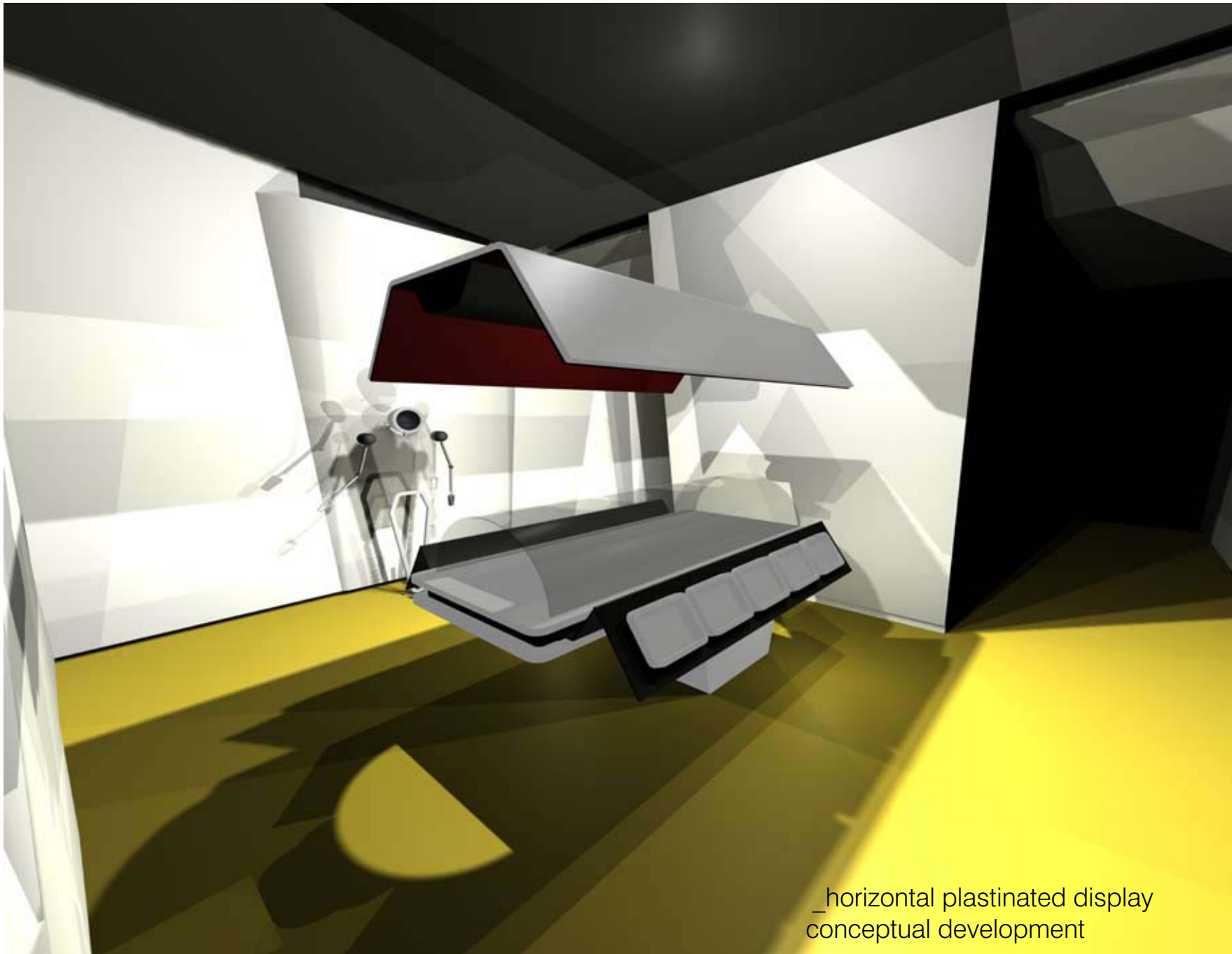


interactive information station

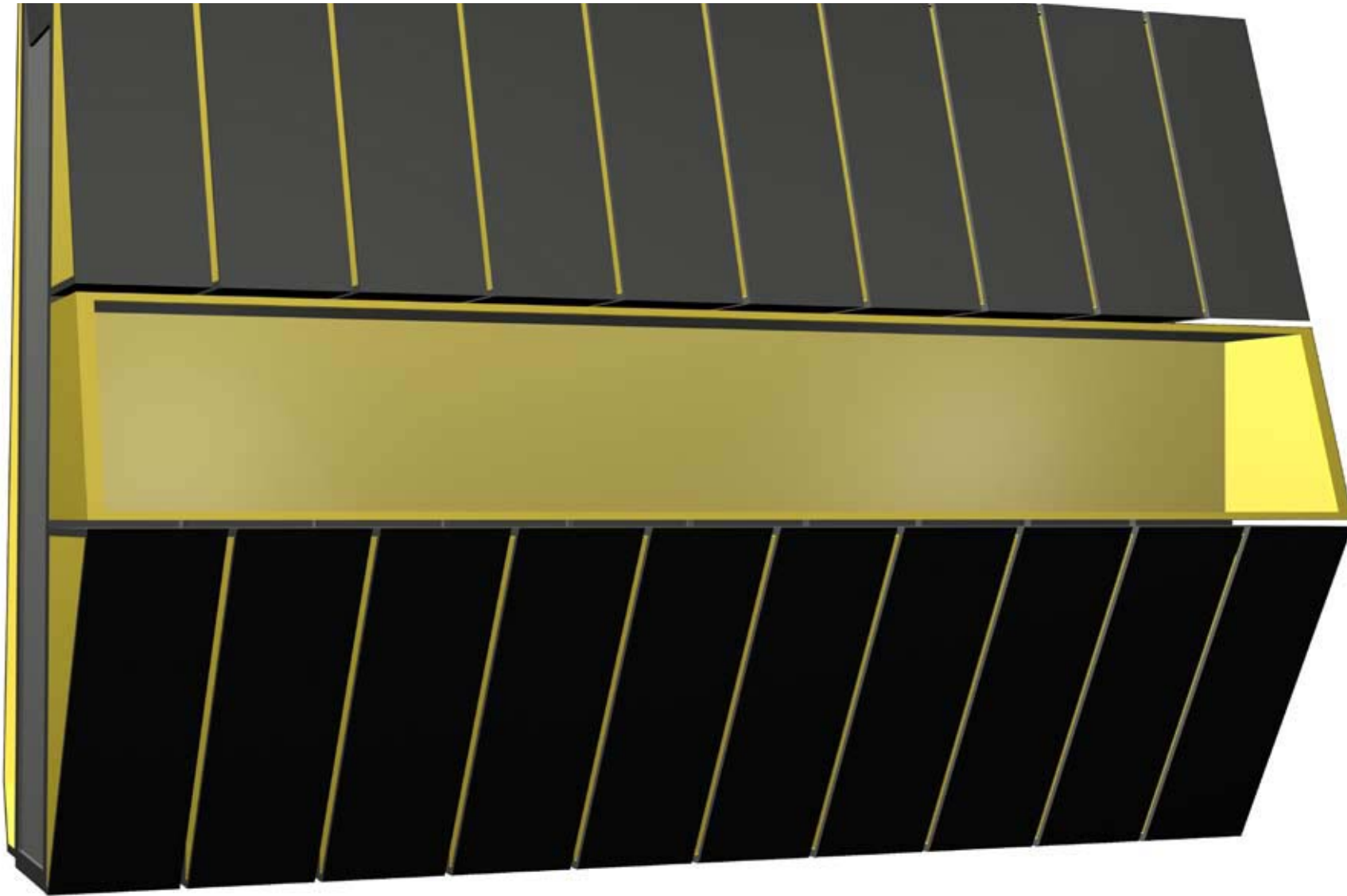




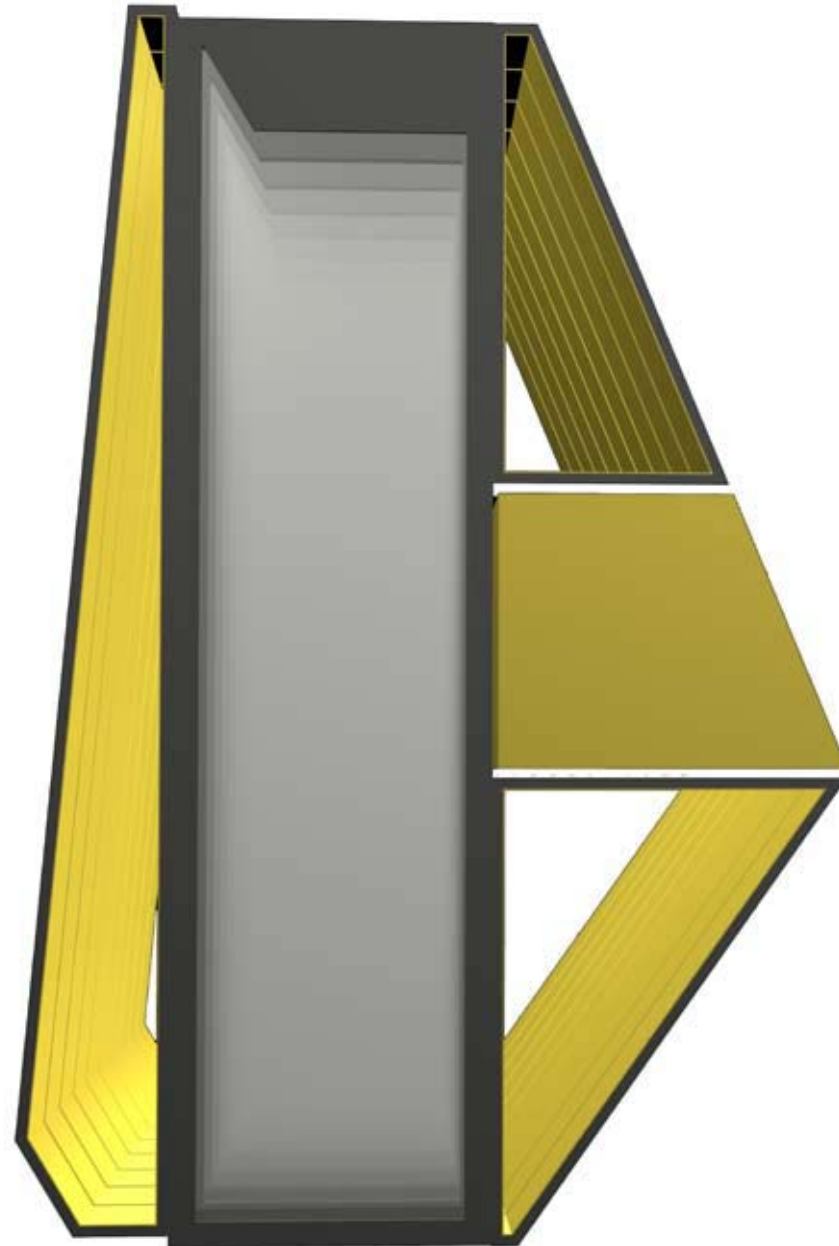
_conceptual development of measuring station



_horizontal plastinated display
conceptual development



_vertical body display drawer



_vertical body display drawer



_light table display



_holographic table display