ABSTRACT: This spatial experiment is about the architectural interpretation of space, space perception and light. In a workshop students of different disciplines realised spatial installations of light and colour in 1:1 scale. The reason for this experiment was to reflect on the interaction of light and colour in architectural space. A mix of practical trials and discussions fostered experience and knowledge about use of colour, light and motion. This approach conveys a possibility of working with space, light, colour and material as a total examination of the space.

INTRODUCTION: One would naturally assume that ‘space’ would be perceived similarly by everyone. However, looking at different spatial concepts in disciplines such as in architecture, psychology, philosophy or art, the ‘approach of space’ builds on a very diverse phenomenon. Often, one ‘space’ is referred to in purely mathematic terms: a box is defined by three dimensions of length x width x height, which is perceived rather differently according to the field of human perception. For example Wolfgang Meisenheimer explains in his book ‘Reflections on the Body and Architectural Space’ the geometrical space as site, is not experienced but imagined: ‘It has no contents in the meaning of perception, memory, and colouring of emotion. It describes nothing but a position in an imaginary space, the structure of which is limited to few spatial features.’ [1]

How is space conceived in architecture and why is space so important for architects?
When working with colour, light and material individual parts tend to be regarded in isolation with less awareness of the interaction of the various components in a space. It is very typical for architects to consider all individual components in their context. In the preface of Gosztongy Alexanders book ‘Der Raum’, vol. I [2] he describes three higher components of space, the philosophical (meaning psychology, phenomenology), the geometric and the mathematical-physical space. Each of these spatial analyses leads to one specific conception of ‘space’, although all three can be distinguished they relate to the same ‘space’. To understand space I would briefly like to describe some aspects of these spatial characteristics, which are subsequently of importance for the analysis.
of the experiment in architectural space.
The event space is the space in which one moves, it is mainly determined by unconscious actions, perceptions and experiences and is the basis for further spatial experiences. The action space extends from the event space, therein the human experiences 'space' through deliberate actions such as ego-motion. The perceptual space contains different kinds of perceptions; it is the sum of all sensorial spatial experiences, including experiences through movement. 'Space' as a whole can never be perceived, and is therefore restricted to contents, parts, layers, or atmospheric perceptions of space. Sensorial space is the basis of perceptual space it is composed out of the experiences of individual senses. It can be related to different senses, such as visual space, listening space and tactile space. The sensory space can be considered as an integrated overview in spatial perception. Last but not least the imaginative space is important for the reproducibility of spatial formations. To interpret space specific ideas, existing knowledge, memories and associations are used. In architecture it is more useful not to separate 'space' into categories, but to consider the space as more than just the sum of its parts.

WORKSHOP: The workshop 'Light and colour acting in architectural space' was held in April 2008 in Santa Fe, Argentina at the Foro Cultural of the Universidad Litoral de Santa Fe (UNL). The workshop was part of the series of events 'Crosslink’s in Architecture'. The three-day program consisted of a theoretical session and two half-day practical workshops. Students from the fields of film, theatre, photography, dance and architecture attended the workshop.

The practical oriented session started with a technical introduction to the lighting equipment available on site and was followed by a session of experiments on 1:1 scale. The initial phase focused on trials. The task consisted in choosing and illustrating the theme 'space' by means of light, colour and material. Conclusions of the initial experiments were presented at the end of the first day. The requirement for the second session was to work within the space of action and with the elements on site. At the beginning the students analysed, experienced and consciously perceived the space. In the foreground was the discovery of something particular and special within the target space. Some students were inspired to work with memories of experienced situations and with motion in space.

Each of the four groups chose a place to realise their ideas. A group topic and objectives were specified by group discussions. In the existing spatial context the groups were supposed to interact by using simple means such as light, shadow, material and colour. The goal was to render spatial experiences in a way of perception through appropriation of space and interaction. As a result all
participants could experience all realised spatial installations. The ideas that underpinned them where presented verbally.

‘SALA EXPERIMENTAL’ / LOCATION: A completely empty and darkened room with the dimensions of approximately 14 x 8m in size and a height of 5m (see sketch) was used for the experiments. At a height of 3m there was a technical platform for mounting light and sound equipment.

‘EXPERIMENTOS’ / INTERVENTIONS IN SPACE: Combinations of ‘Light and Shade’, ‘Colour and Motion’ are inseparably bound together. The different intensities of light and shade form the body and give it its three-dimensional spatial character. The idea is that colour moves, it never stands still, as well as the eye, which is in charge of the ‘processing’, is constantly in action, only their dynamics make the experience of space a reality. Colour evokes feelings, because ‘the eye requires it as much as it requires light’, as described by Goethe in his Theory of Colours. [3]

In the first part of the spatial experiment a play of images and static moments of light and colour were created. Through experimentation, the possibilities of light, colour and material were explored and the spatial atmosphere was actively changed. In the initial student works, neither motion nor shade was applied predominantly. The second part of ‘Acting in Architectural Space’ began with the analysis of the ‘empty’ room. All students had the same starting conditions; the action space, the performance space and the sensory space (assuming the ideal) fulfilled the same conditions. The participation of students from different disciplines demonstrated different approaches to the event space and space experiences. Each student discovered the ‘space’ individually, reflected their own ideas and developed concepts to actively change the spatial atmosphere. The resulting ideas and discussions were very rewarding, as through the interdisciplinary mixing within the groups, an active examination of different spatial concepts began. Driven by fresh ideas students started to revitalise the space with their installations.

The motion space around the experimental areas were completely exploited, space was experienced through motion and light in different ways. The applied motion changed light situations, shadows and colours in each installation continuously. Through student interactions short choreographies involving light and movement were created for the final presentation of the installations.

PROJECTS:

- Project ‘Escalera’ / Stairs in Action
- Project ‘Movimiento’ / Colour in Action
- PROJECT ‘ESCALERA’ / STAIRS IN ACTION: A staircase serving the technical platform and originally hidden behind a sliding panel was transformed to main actor in this installation. The playing with the sliding elements and the positioning of the light sources was arranged so that the staircase itself was never visible. Through two deliberately selected viewpoints only casted shadow could be vaguely perceived. It was possible to alter the size of the shadow by altering motion of light and actor and therewith transform the space.
  Colour: red + green / 2 light sources / 2 filters / 1 dimmer switch / Actor: person + stairs
In a completely darkened room, there were a narrow and a somewhat wider gap in the wall. This intimate, hidden situation led the students to confuse the viewer by coloured shadow patterns created through movement behind the sliding walls. The strength of this illusion was enhanced by a shadow play like a movie.

- PROJECT ‘MOVIMIENTO’ / COLOUR IN MOTION: As the name of the project already tells, motion was what counted for the students in this installation. A shiny white fabric was attached to the technical platform, and illuminated by four light sources from different directions. The illumination of the surface was done by light filtered to red, blue, green and yellow, and was set in motion by the wind.
  Colour: red + blue + green + yellow / 4 light sources / 4 filters / Actor: wind + shiny white fabric
A simple operation using a sheet of fabric that is blown by the wind and its constant and fluent change. In motion, the boundaries of colour and light began to blur enabling them for a moment to merge and re-form. The consequence of the deformation of volume and colour changed the perceived character of space. A quality of the installation was the timeless and joyful choreography.

- PROJECT ‘SOMBRA’ / COLOUR AND SHADOW: Between light source and projection screen a virtual space built up creating an illusion of spatial depths. This effect was created by producing differently sized silhouettes across various distances between the light sources and the image plane. The motion within the installation caused a change in the coloured appearance of the actor and the screen in the background.
  Colour: red + blue + green / 3 light sources / 3 filters / 1 dimmer / Actor: person
The appearance of the space was transformed by constructing virtual volume between screen and light sources using motion sequences. The emerging moving picture changed via the interaction of the ‘passers-by’ creating continuous new variations that was dependent on the use of space.

- PROJECT ‘SILLA’ / SHADOW OBJECT: The goal of this installation was to create space, through its appropriation and interaction, an experience of a different kind. A shiny white screen and a chair were mounted in a corner below the technical platform. The chair was backlit and set in a continuous rotary motion. A subtle play of light was initiated by either white or a combination of white and yellow light. The perceiver was encouraged to imagine daylight falling through an open window.
  Colour: white, yellow / Shiny white screen / 2 light sources / 1 filter / Actor: chair
By positioning the installation in the corner, a spatial illusion was created, which appeared on a deliberately set projection screen between the installation and the viewer. Due to the continuous rotary motion of the object, a shadow play with cinematic character was produced.

PROJECT EVALUATION: During the period of engagement, the students gradually began to understand the given spatial situation better. Through deeper engagement with the given space students started to shape their own light ideas. Initially communication between the students was difficult, but through the discursive comparison of self-perceptions in the group comprehensive spatial images were created and a higher level communication evolved as the project developed. Conclusions were drawn and it was found that the available action space, which had been completely emptied at the beginning, was far too dynamic and monotonous for the students. The need arose to give the space new life and rhythm. As a means of re-interpretation of the space the students used colour and motion together with light and shade. Colours created ‘atmosphere’, even the naturally existing shadows aroused specific
attention. The created movement was expressed either in light, shade and colour or through moved surfaces, objects and people. The result were emotionally stimulating situations.

CONCLUSION: Through communication about their experience, ideas and concepts, the students learnt about spatial relationships of light, colour and motion. The given space offered ample opportunities for students to explore different spatial conditions. Concerning the choice of colours the large palette of colours available tempted students. The selection of colours was not always considered thoroughly resulting in a play with colour without critical reflection. Temporarily the workshop participants had succumbed to the fascination with colour and, consequently, space was for a moment of secondary concerns. In general the light-colour creations produced by the students were motivated by shaping an atmosphere. Based on the initial enthusiasm, the students managed to transform the given architectural space by their installations that all triggered mood and emotions. Thereby use of motion proved to be an essential part. Together they learnt about the impact of colour in space. This experience led subsequently to a more critical reflection on the use of colour.

REFERENCES: