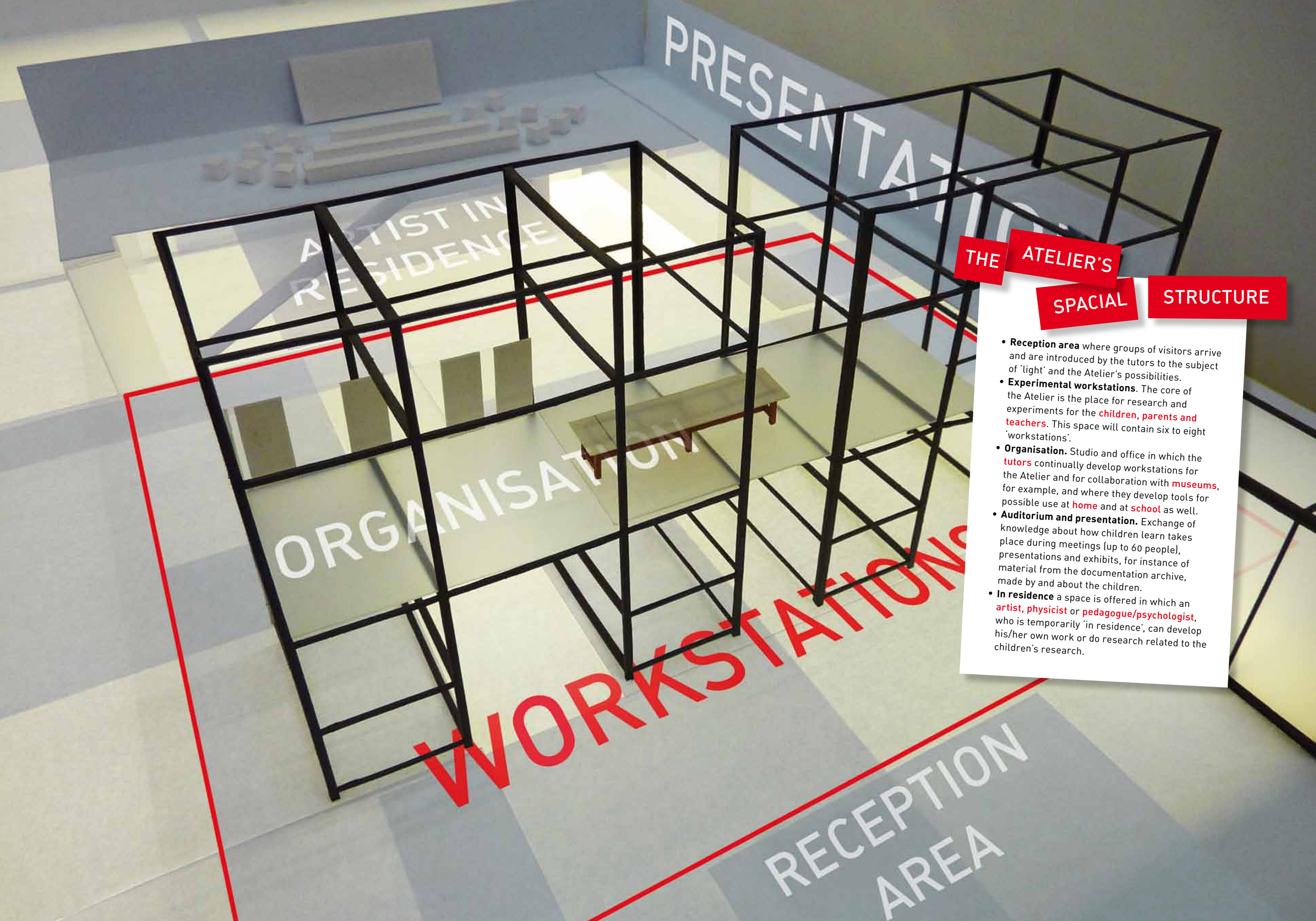
ATELIER OF LIGHT

WHY THIS ATELIER OF LIGHT FOR YOUNG CHILDREN?

Children are budding artists and scientists. From birth they study and interpret their world, form hypotheses and communicate about what they experience. Children are fearless in their approach to the unknown and constantly change perspectives. Logical thinking and poetry, truth and imagination, exact questions and aesthetics, moral questions and factual conclusions: for children, these concepts easily melt into each other.

However, in the spectrum of cultural activities our society offers to children, arts and sciences generally are two separate worlds. Regrettably, institutions are occupied either exclusively with art or with science, although the success of `Netherlands-Knowledge-land' depends entirely on raising creative, exploring and enthusiastic citizens. People who are curious about the unknown, who develop passions and are willing to look across borders. Children are born that way. Also, brain scientists will tell us time and again: the younger they are allowed to develop this ability the better! Creativity in the sense of the freedom to look constantly at things from different viewpoints is the source of many artistic and scientific developments. The world of wonder and the world of insight are inextricably bound up with each other.

The Atelier of Light brings together the world of art and the world of science – and with it concepts such as research, exploration, experiment, curiosity and interaction – around the subject of 'light'. The Atelier focuses on research, curiosity and passion and plans to be a place where young children, their families and teachers will have the opportunity to explore. Closely related to what the children are offered, the Atelier also wants to be a place where artists, scientists, and pedagogues/ developmental psychologists can do research. The members of the project group which is developing the Atelier reflect all of those fields.



THE ATELIER'S SPACIAL STRUCTURE

- **Reception area** where groups of visitors arrive and are introduced by the tutors to the subject of 'light' and the Atelier's possibilities.
- **Experimental workstations**. The core of the Atelier is the place for research and experiments for the **children, parents and teachers**. This space will contain six to eight 'workstations'.
- **Organisation.** Studio and office in which the **tutors** continually develop workstations for the Atelier and for collaboration with **museums**, for example, and where they develop tools for possible use at **home** and at **school** as well.
- **Auditorium and presentation.** Exchange of knowledge about how children learn takes place during meetings (up to 60 people), presentations and exhibits, for instance of material from the documentation archive, made by and about the children.
- **In residence** a space is offered in which an **artist**, **physicist** or **pedagogue/psychologist**, who is temporarily 'in residence', can develop his/her own work or do research related to the children's research.

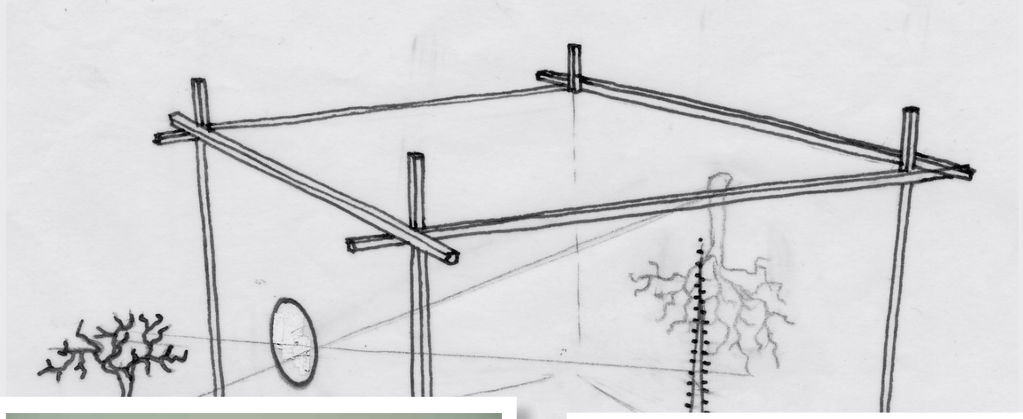
WHY THE PHENOMENON LIGHT ?

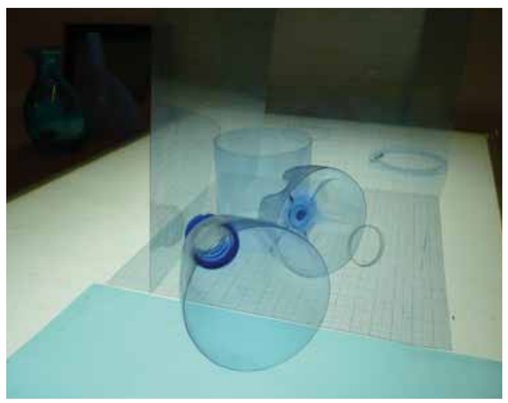
Light makes everything visible but is of itself elusive. For artists this seeming contradiction forms an inexhaustible source of inspiration. Sometimes light manifests itself as a brightening, straight beam diagonally across a painting with a large cast shadow and engages us in the story the painting is telling. At another time it may become visible as a hot, sultering or shimmering summer afternoon in a French impressionist's painting, or else as a whitegrey cloudy Dutch sky with a large range of colouring and reflections on the water. It shows itself in the world of photography and film, or blinds us in a contemporary installation, where the physical and sometimes threatening force of light is almost tangible.

'I don't paint cows but light'
(Willem Maris)

´For the remainder of my life
I will ponder, what Light is ´
(Albert Einstein)

The phenomenon of light is no less rich for the scientist. The variety of reflections, refractions and colours is an ongoing subject for research. The way in which different materials refract, absorb and emit light tells us almost all we know about matter in the world in which we live. Whether it is about the stars in our universe or about the smallest building blocks in our world (atoms and molecules): we know them because we make images of them with lenses, mirrors, telescopes and microscopes, and measure their shapes, colours and intensities. The science of light is bringing more and more innovations into our daily lives as well, for instance in the form of cd-players, LED lighting, fiber for broadband internet, displays, ccd cameras.





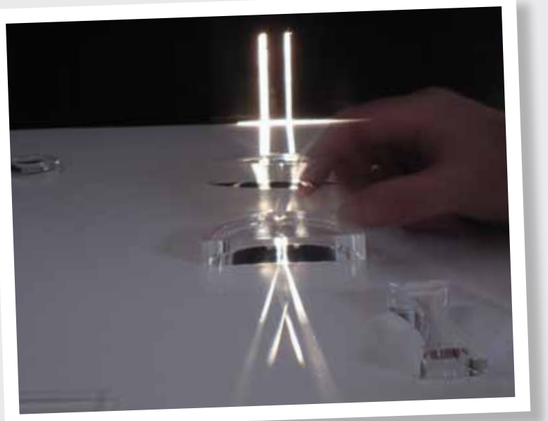
WHO IS IT FOR?

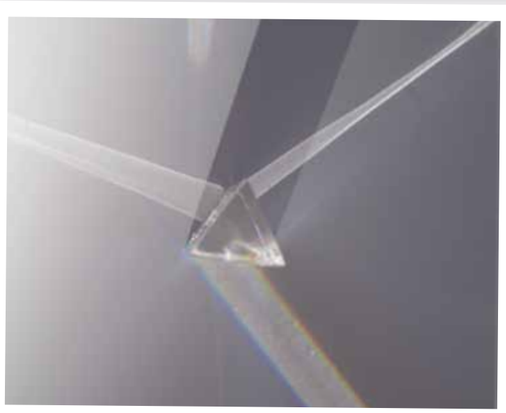
The Atelier of Light is meant for children between 3 and 7 years old, their families and teachers. In the Atelier, children have time and space to do their own research into the phenomenon of light, to experiment and form hypotheses, to arrange compositions and ask themselves and each other questions about optical effects. The workstations in the Atelier study the daily effects of light, such as reflection, refraction and colour mixing. The children will be stimulated to be curious and to experiment in everyday life as well. During the week, the Atelier receives groups of pre-school children and on weekends families with young children. Pre-schools will be offered a series of visits which will enable children to continue making new discoveries and to deepen their research. Primary schools can link up with the children's experiences.

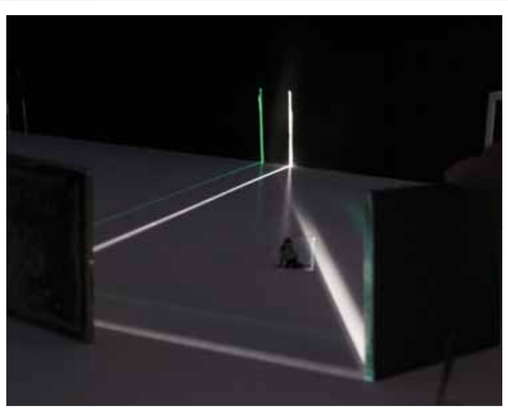
RESEARCH, DEVELOPMENT AND STUDY

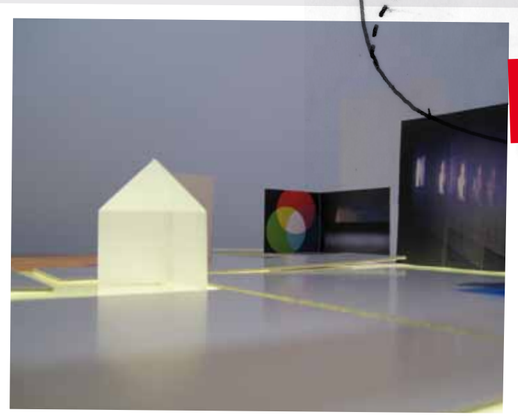
The Atelier will be a place for research and development within art and science and on all levels. Research, curiosity and independent exploration are the central values the Atelier offers to children. At the same time, this will make the Atelier a unique location for studying how young children learn and which strategies they use for forming and expressing theories. Consequently, the Atelier will welcome pedagogues and developmental psychologists to study the learning process of children and the role art and science play in this process. Trainee placement will be offered to educational and art academies. In addition, artists/scientists will be offered the opportunity to devote a period of time to do his/her own work or research, in collaboration with and for the benefit of the Atelier.

The children's workprocesses in the Atelier will be carefully documented in word and image. This material will form the basis for reflection by the supervising team. It will also serve as source material for conferences and expositions for parents and all professional groups which concern themselves with young children. A workshop will be set up in the Atelier, where based on the experiences, the documentation and the reflections, the workstations will be adapted, extended and further developed.









THE WORKSTATIONS

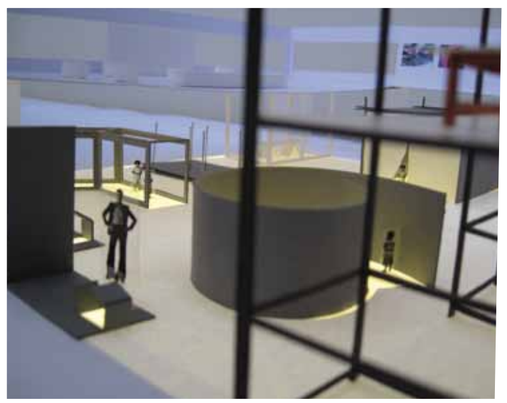
The heart of the Atelier is an attractive space with workstations where children, individually or in groups, play and experiment with various aspects of the phenomenon of light.

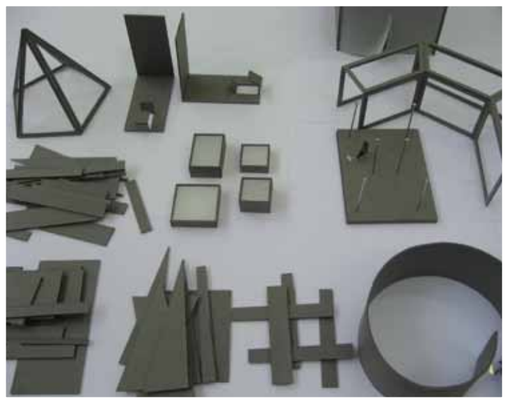
A workplace (which has been proven to be challenging) consists of an arrangement of different kinds of projectors: a transmissionprojector, a reflection projector and a homemade projector.

Children can put objects on the illuminated projector surface and project images of the objects on the wall. By offering several colourful, transparent or halftransparent, opaque, textural or powderlike materials, a whole scala of subjects related to light can be dealt with.

What is the relation between the world on the illuminated sheet of glass and the world on the wall? What is the orientation of objects and their movement when they are displaced on the projector (reflections)? In case of reversal of the image, at what point does the image reverse itself? Why is the projected image so much larger than the original object? Why are some coloured objects black on the screen while others become brighter? Why is it that even white objects are black on the screen? How do colours mix? How does a projector work? Why does it enlarge and what is the path of light? Where does the image start and where does it end? Why is it that colour changes the scale and thereby the essence of a composition? What happens when you move the projector closer or farther away from the wall?

The special relation between actor and observer is another point of central interest. A projector provides a link between both roles and gives the child a double role: he/she composes something on the glass plate, but the projected image is not the same as the composition. What is the real (the right, the true) composition?





THE WORKSTATIONS

imagination

creativity

interaction

lab for optical materials – new technology

curiosity

composing

phosphorescence – fluorescence – making light – removing light

fantasy

looking

research

camera obscura – image formation – lenses

asking questions

amazement

developing hypotheses

discussion

refraction – reflection – dispersion – rainbow

concentration

projection – colour – mixing - unmixing

tentative theories

collaboration

passion

occlusion – subtractive mixing – colour and composition

playing

experimenting

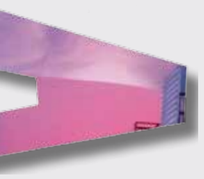
reflection – refraction-absorption – distortion

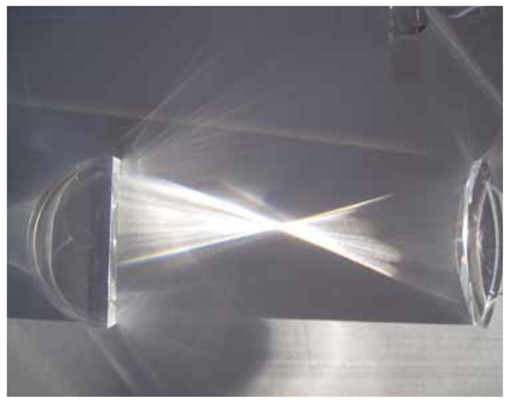
cmy vs rgb - mixing colour gamuts – colour without context – colour in shadow

pleasure

inventing

exploring





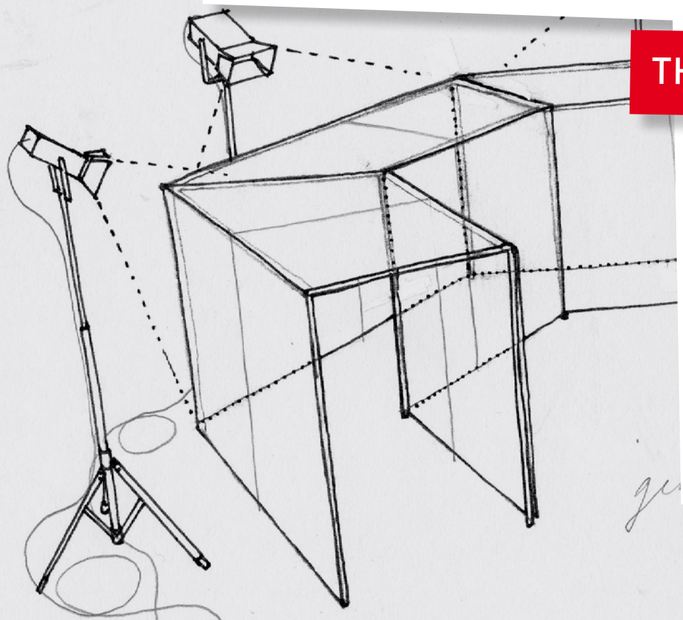
THE TUTORING

In the Atelier, tutors with a pedagogic and/or artistic or scientific background who have received internal training, work together. They are expected to stimulate and support the children's research; not in order to provide answers but rather to encourage the children to keep asking themselves and each other new questions. The tutors themselves have an exploring and inquisitive attitude and are open to unexpected ideas, thoughts and experiments from the children. They form a team with the Atelier's staff, with whom they exchange ideas and reflect, and adjust their way of supervising. They also contribute to the further development of the workstations.

WHERE ?

It has not yet been determined where the Atelier of Light will be located. At present the project team is looking for partners and sponsors, and in that connection for the best location. Another possibility would be to build the Atelier as a mobile installation, in which case it could travel along different locations. Ideally, the Atelier should measure 500m² - 900m², but a smaller scale start would already provide a valuable start of the initiative.

The project group plans to develop various tools for the children in the Atelier of Light which they can take home for further experimenting. In addition, the Atelier plans to develop projects, workshops and arrangements which can be realised in other places in the Netherlands as well. As a result, the Atelier of Light will radiate on a nationwide level.



THEORETICAL SOURCES OF INSPIRATION AND BACKGROUND

The project team of the Atelier of Light is inspired by the educational theories of Social Constructivism and by concepts about the role of art and science in de learning process of children from the so-called Reggio Emilia Approach. The project team paid two important working visits: one to the Atelier Raggio di Luce in Reggio Emilia, and one to the Exploratorium in San Francisco. Both visits have resulted in the wish and joint intention to collaborate towards the development of the Atelier of Light in the Netherlands. Reports of these visits are available on request.

THE PROJECT TEAM

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Eva Klee, visual artist, TOEVAL GEZOCHT
Femius Koenderink, physicist, FOM Amolf
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Marloes Lubberdink, Project leader Talentenkracht/ Platform Bèta Techniek
Bas van Tol, designer, Müller and Van Tol

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THE PARTNERS

About the Foundation TOEVAL GEZOCHT: the Foundation TOEVAL GEZOCHT was founded in 2008 after the first extensive project with 15 preschools, 15 artists and the Stedelijk Museum Amsterdam. Most important objective: the exploration, visualization and support of the learning potential of children, with specific attention to the role of art and artists and to the connection between art and science. The foundation also intends to strengthen the part children play within cultural institutions. TOEVAL GEZOCHT plans projects in which young children, schools, art institutions and artists collaborate, it coordinates networks and initiates research. TOEVAL GEZOCHT collaborates with domestic and foreign partners in this. www.toevalgezocht.nl

About science center NEMO: With more than 500.000 visitors NEMO is the biggest science centre in the Netherlands. Everything at NEMO has to do with science and technology. Interactive exhibits, theatre performances, children's lectures, workshops and science shows. Inside the centre, you smell, hear and feel the way in which the world works. NEMO has its own expertise center in the field of extracurricular learning about science and technology: the Science Learning Center. The SLC develops knowledge, products and services with the aim to make learning at school more pleasurable and to help the message become more embedded. www.e-nemo.nl

About TalentenKracht: TalentenKracht is a research programme into children's talents in the field of science and technology. Researchers from many different disciplines (brain science, linguistics, mathematics and developmental psychologists, among others) work together in search of the natural curiosity of young children and of how to preserve and expand it. www.talentkracht.nl

About FOM Amolf: the Institute for Atom and Molecule Physics (AMOLF) is one of the scientific institute of the Foundation for Fundamental Research on Matter (FOM). This institute, located at Science Park, Amsterdam, performs fundamental scientific research into complex atomic and molecular systems. The researchers use light in the form of lasers, spectroscopy and microscopy to study the dynamics of molecules, proteins and cells, and also work on nanophotonics – the physics of light on the smallest possible scale. The Studio fits in perfectly with AMOLF's mission to transfer knowledge and applications to businesses and society. www.amolf.nl

About Müller Van Tol: Design firm for industrial and interior design. Located in Amsterdam and under the direction of Christiane Müller and Bas van Tol. Interior designer Bas van Tol is specialised in temporary interiors with an eye to the identity of the project and the context of the situation. Spaces are created in which the experience is important and the meaning is open to individual interpretations. Some realised projects are: Restaurant and club '11', the lounge of the European Council in Bruxelles, entrance hall Museum of Textiles in Tilburg, entrance of the main office of SNS Reaal and the exposition 'The Children of Reggio Emilia' in the Stedelijk Museum Amsterdam. www.mullervantol.nl

COLOPHON

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