

# THE CINE REFLECT LIGHT SYSTEM©

Christian Berger & Christian Bartenbach

patented

## A NEW FILM LIGHTING SYSTEM IS BORN

### THE MOTIVATION

When you really observe natural light, you can learn so much from it. The rest is what people have and want to introduce as a vision or their own emotion, that's then creation or design. I have just one luminary, that's the sun, it provides the light. Then there are reflections, diffusions and still a little absorption, and that's the whole variety of lighting moods. It's nothing more.

The development of more and more sensitive emulsions and/or chips requires a redefinition of the film light. Illumination is more and more designing instead of a necessity – this favours the development of new lighting systems. Being aware that not only technologies but also methods of directing and acting evolve, the development of new tools for colleagues becomes a further challenge. To me, the B&B Cine Reflect Light System represents an ideal system on sets in combination with available light and a perfect complement to the conventional studio lighting.

Christian Berger AAC



Christian Berger with crew on the set of DEAD MAN'S MEMORIES

## THE CONCEPT

In order to modulate – the alteration of physical characteristics like quality, quantity, shape and direction – the light that is projected onto a scene, contemporary cinematographers place several items between the light sources and the actors as well as decors. In doing this with gels, foils, flags, cutters, cinematographers reduce inevitably the power of light. Because of this fact, it is sometimes necessary to use large luminaries and so to create unpleasant space restriction, heat and noise on the set, and obviously higher power consumption. Furthermore, a large array of stands and grip material obstructs the space needed by the director, the actors and the cinematographer to visualise the script.

The idea behind the B&B Cine Reflect Light System is to avoid diminishing the light by “obstacles” and to replace these tools by special reflectors. These reflectors can influence dramatically the shape and structure of light that reaches the scene. To obtain the best possible efficiency, it is paramount to place the special reflectors into parallel light beams.

Therefore, the B&B Cine Reflect Light System is composed by a range of luminaries and an assortment of specially calculated laminations.

### The B&B luminaries

In order to achieve an effect as close as possible to real sunlight, a luminary that sends out parallel beams – this doesn't exist in the field of film lighting yet – is requested. Xenon luminaries are quite similar, but the output is not only often much too high, it is also not “clean” enough for film lighting design.

Actually, only the punctiform HMI light sources provide good results in combination with accurately designed reflectors in the luminaries. The currently available halogen light sources are not point-shaped and therefore not suitable for obtaining the parallel beam requested by the B&B Cine Reflect Light System.



Prototype II / 1200 HMI

### The B&B reflectors

With the laminations calculated and designed by the Bartenbach Laboratory of Light, cinematographers can create any desired effect. Practically they need nothing more than small, highly filigree laminations with the appropriate surface structure and they can create everything they need and light up practically the whole scenery with the reflected light beams. These small laminations are precisely measured reflection media, which, through fine structuring and diverse coatings, define the light distribution as well as the light modulation exactly.

The size and shape of the reflectors is important. Tests have demonstrated that a range of reflectors from 60x60 cm (about 1.97 x 1.97 feet) to about 6 x 6 cm (about 2.36 x 2.36 inches) is fully sufficient for most applications. Because several types of reflectors are needed to design adequately the illumination, a set of quick-release reflector-frames and holders will not only allow fast exchanging of the laminations but also provide the requested stiffness. Remote-control of each reflector will facilitate the handling and will speed up the lighting operations.

## The B&B Light Supports and the Lighting Crane

Because of the tremendous output and the energy focused by the B&B luminaries, even a wide scene can be illuminated with the light emitted by just one of them and re-directed by means of few reflectors.

### System alignment with traditional stands

The simplest way to use the system is to mount the reflector-frames and the luminary on regular stands.

### System alignment with a support system

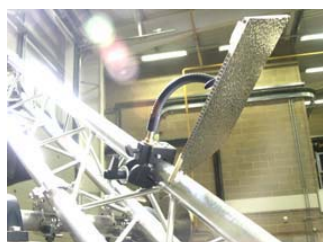
A more efficient way (lighting a set becomes less time consuming) is to mount the luminary and the reflector frames aligned on a support base. This alignment is mostly foreseen when the system is built up outside the set. Regular tubular components (truss) can be used to set up a rigid base of about 4 m / 13.1 ft. This base can be mounted on heavy duty stands or fixed e.g. on a cherry picker or a construction crane. The luminary is mounted on one end of the base and the reflector-frames can be placed all along the light beam.

The idea to place four individually adjustable reflectors in a "main"-frame at the other end of the support base has been tested very successfully. Further effect reflectors placed on the edge of the beam between the luminary and the main-frame will also tremendously help designing the illumination.

### System alignment with a mobile support system – the B&B Lighting Crane

In mounting the B&B luminary to the lower end of a mobile crane (similar to a camera crane) and placing the main-frame at the top end of the boom enables to place quickly the reflectors on the optimal position without having to readjust the alignment of the system.

This construction shows all the advantages of the B&B Cine Reflect Light System in countless applications.



Prototype of the Lighting Crane with a little single reflector as well as with the four reflectors Main Frame

## ADVANTAGES OF THE B&B CINE REFLECT LIGHT SYSTEM

### Artistically

#### ➤ For cinematographers

The system expands the creative possibilities, enabling very precise designing of the phenotype. The appearance of lights and shadows areas is easily controllable since the tasteful modulation of the light itself is uncomplicated to achieve.

#### ➤ For directors

The system allows maintaining a level of intimacy requested for undisturbed communication e.g. with the actors. It also enables spontaneous changes in the mise en scène because it doesn't ask for long lasting alteration of the light design.

#### ➤ For actors

Because most of the components of the system are placed outside of the set, no obstruction caused by cumbersome equipment will interfere with the freedom of movement. Furthermore, the quasi glare-free light as well as the remaining pleasant temperature favours the substantial blooming of artistic expression.

#### ➤ For sound recordists

Traditional luminaries, ballasts, and electronic control units emit noise. Since no (or just very few) luminaries are located close to the microphones, the atmosphere noise level is significantly reduced on set using the B&B system components.

### Technically

Knowledge about photometry as well as about new materials enables the development of the equipment technology regarding a completely new level of efficiency and handling. The only limitation is given on exterior sets when a strong wind is blowing; but this limitation is similar when using e.g. light balloons or luminaries on rostrums.

### Work methodology

The formative needs of film directing, performing art and cinematography are determinant – the technology has to serve.

Using the B&B Cine Reflect Light System will engender tidy locations where the sets are nearly free of grip (stands, flags, frames) and gaffer equipment (cables, luminaries).

The light modulation is achieved by choosing the appropriate reflection media.

Because of the wide range of special B&B reflector boards, the amount of frames, flags, scrims, cutters, fingers, arms, and further heavy grip equipment is reduced to a minimum while the light design possibilities are practically not restricted.

The B&B Cine Reflect Light System allows a wide flexibility in designing the light and a substantial shortening of the lighting time.

Furthermore, the volume of B&B Cine Reflect Light System equipment is significantly reduced in comparison with traditional lighting equipment. This affects consequently the storage as well as the transport.

## Cost reductions

The following possibilities of production cost minimization are favoured by e.g.

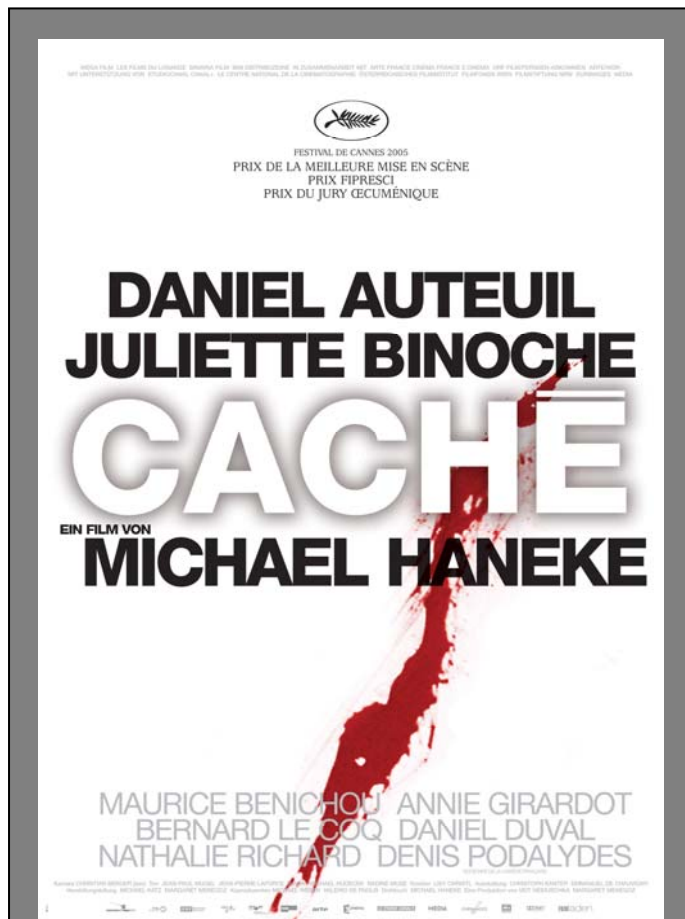
- the large flexibility in organizing the shooting e.g. the construction period,
- the reduction of the transport volume for lighting and grip equipment,
- the reduction of lighting time,
- the possible reduction of personnel requirements,
- the substantial diminishing of the power consumption

## STATEMENT BY CINEMATOGRAPHER CHRISTIAN BERGER

- The system really shows a great step forward into film lighting, not so much for technical reasons but primarily to create far more free space for actors and directors and to produce creative free space for the camera, too.
- Besides creating new aesthetic aspects for the camera, an unknown flexibility and freedom for the artistic work, particularly for actors and directors, are provided by the B&B Cine Reflect Light System.
- It's amazing –like almost the case with the B&B Cine Reflect Light System – that the entire set is free from stands, cables or additional spotlights. Usually, just one B&B 1200 HMI luminary, located on the edge of the set – it could be even outside – can be split by means of reflectors to provide a high quality fill as well as a modulated key light. By placing a pair of complementary reflectors, also a back light can be created – still using only the single B&B luminary. Furthermore, special smallest reflectors can be used to model e.g. the lighting of faces and to bring eyes to glow.
- What I'm particularly pleased about, is that the viewing becomes more central, this means that when I, as the cinematographer, see an image, I can produce it straight away with the help of these small, simple and basic tools. Or even make variations straight away or even modify straight away when something changes. It's possible to modulate the light much more delicately; more subtly, just like a painter working with a paintbrush.

## STATEMENT BY CHIEF ELECTRICIAN HANS-JÖRG KIRCHMAIR

- This new system has also the great advantage, since the set is not completely cluttered with equipment, that you can already assemble together and reconstruct during rehearsals without any great difficulty and without disturbing the director because you can practically do it all from the background without making any noise.  
The real effectiveness of the system is especially visible in normal daylight situation; so e.g. a smashing sun effect can be produced by one B&B 1.200W HMI parallel beam luminary in combination with the adequate B&B reflector.  
This high level of effectiveness is achieved through the perfect combination of the B&B luminary and the special laminated reflector, producing an all round optical system.  
Similar to other optical systems, the B&B Cine Reflect Light System has also to be treated appropriately, so the reflectors are to be stored or loaded onto the truck carefully and also handled with care when filming.



Michael Haneke, director of *Cache / Hidden*, to Christian Berger AAC:

*"What impresses me most, is your commitment to this new concept of lighting – a revolution! I wish you and the industry that it establishes itself. All directors and actors will love you for it..."*



Margaret Menegoz, producer Les Films Du Losange, Paris

*"The Cine Reflect Light System has undoubtedly an influence on the production costs (saving on the lighting equipment, on the technicians, on the rigging time). Furthermore, the actors and directors have all noted the fantastic freedom engendered by the absence of luminaries on the set..."*



Ron Holloway, correspondent for Variety, The Hollywood Reporter, Moving Pictures International)

*Another top festival winner was Christian Berger, cinematographer on Michael Haneke's Cache (Hidden) (France/Austria), who received both the Audience Award and the International Critics Prize. As for the International Critics Jury, this ad hoc assembly of eight visiting international critics cited Christian Berger »for his masterful blending of digital technology with classical cinematography to elucidate the inner emotions and conflicting viewpoints of an intellectual torn between an ethical code and his moral conscience.«*"

## STATEMENTS BY ACTORS

French actress Sylvie Testud while shooting *Dead Man's Memories*

*Already in the first two days of filming, I had immediately thought myself – there's no light. Where is all the lighting equipment? Because I'm used to see large equipments with so many HMIs on set... Christian only used one or two HMIs for filming night outside. I took note of his system, when I had seen these small reflectors that looked like ping pong balls, like cut-up golf balls or something like that... I noticed it with the leading actor, who all of a sudden had an unbelievably clear gaze and I was able to make out the colour of his eyes for the first time... And I asked myself, where is this lighting coming from? I have had to search from where was the light coming.*



French actress Natacha Régnier while shooting *Ne Fais Pas Ça*

*I sensed absolutely no spotlights... This brought an intimacy to the acting like at home... There was obviously a very elaborate present light, however. But you couldn't sense the light like you can with the large spotlights. I actually had the impression that he (Christian Berger) was just using the light from the house. But it wasn't true. He had many, many things with him in fact. Not until right at the end of filming I began to understand where and how he had positioned the light. Compared to the film that I made straight afterwards, where there were large spotlights all over the place. That was a massive difference. But here, with the light set as it was, there was no way I could have tripped on a stand.*



With director Luc Bondy



French-Serbian actor Miki Manojlovic while shooting *Ne Fais Pas Ça*

*I did of course notice how the lighting was done because it interested me. What I find the most remarkable is the effortlessness of this lighting. It is the easiest that I've come across in all of my films. That is a finesse, a mastery of tasks that was clear to me from the very first day of filming. There are no large spotlights, no grip, no annoying lighting, nothing...it's soft and extremely attractive – beautiful!*



French actress Nicole Garcia while shooting *Ne Fais Pas Ça*

*The softness and the way the light respects the faces that's what I sensed straight away, then it became a kind of game... where are the small reflectors this time? You felt something mysterious, magical, as though illuminated from within as if the face had its own light. This probably comes from this special technique that the light sources are reflections. It became almost a game of hide and seek before each scene... where is the light. I began the film with the "dinner" scene... for me the light was located between knife and fork... there, I saw this small things. I hear "we are ready to shoot... Ah bon, are we ready? There on the table was something like a forgotten spoon... But no, that was the light. I am already quite curious about watching the Luc Bondy film...but especially to see the light too, which is not actually my habit...*



## WHAT KACZEK VISUALS IS DOING TO COMPLETE THE B&B CINE REFLECT LIGHT SYSTEM.

- Create a complete range of components for all kind of applications:
  - B&B parallel beam HMI luminary (e.g. 123 W, 575 W, 1.200 W and 2.500 W)
  - Development of suitable 3.200 K light sources,
- Create sets of special B&B Reflectors in several sizes and the adequate packaging,
- Develop dedicated grip equipment (Reflector Holders, Lighting Crane, etc.)
- Develop a battery powered drive system that will allow the accurate adjustments of several reflectors by a small wireless remote control unit.
- Conceive workshops for companies, e.g. rental houses, production companies, managers of fairs or shows, and for users (cinematographers, light designers, grips and gaffers) as well as their professional associations.

## STATE OF THE THINGS

The conceptualization of the product range, the photometric computations, the engineering and drawings as well as the construction of prototypes and the fabrication of several reflection media have been executed by Berger & Bartenbach. Currently, two weatherproof prototypes of the 1.200 W HMI B&B parallel beam luminary as well as several specially optimized reflection lamination have been used while photographing three feature films in Austria, France, Germany and Portugal.

A 1200 W HMI 5° parallel beam was developed in the Bartenbach Laboratory of Light. The approximate parallel ray and the absolutely even and colour-pure light distribution first made it possible to use the high efficiency of the reflection media from 90 to 97 %. Thus the light efficiency is enormously high. Outside of an angle of about 5°, the luminary is glare-free. Even after being in use for hours it is still possible to touch this luminary with your bare hands, and attach for example colour gels directly onto the luminary, without any need for cooling.



Three prototypes:  
Radio Control Unit



Electric elevator stand



Four Reflectors on the Main Frame

## THE INVENTORS

### CHRISTIAN BERGER AAC

Director, cinematographer, producer and author of documentaries, TV plays and feature films. Directed and photographed among others *Raffl* (1984) – one of the 100 films presented in the new IMAGO book *Making Pictures – A Century of European Cinematography*. Furthermore he photographed *Hanna*, *Monster Darling* (1989) and *Tollgate* (1994). Director of photography e.g. for Michael Haneke films *Benny's Video* (1992), *The Piano Teacher* (2000-1), *Caché/Hidden* (2004-5) and for Luc Bondy *Ne Fais Pas Ça* (2003). Several Austrian and international awards. Since 1994 professor of a camera class at the University of Music and Performing Arts -Academy of Film in Vienna, seminars and lectures at the The Escuela Internacional de Cine y Televisión de San Antonio de Los Baños / Cuba, at the Fémis, l'école nationale supérieure des métiers de l'image et du son / Paris and at the Hochschule für Film und Fernsehen "Konrad Wolf" (HFF) Potsdam-Babelsberg / Berlin.

Member in the group of founders for the Bartenbach Academy of Light.  
[www.christianberger.at](http://www.christianberger.at).



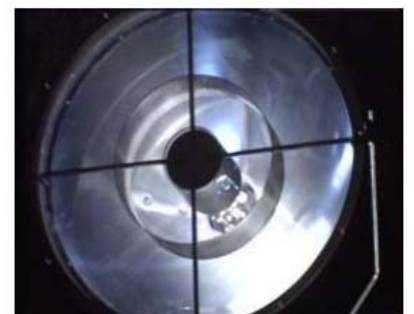
### CHRISTIAN BARTENBACH



In 1976 Christian Bartenbach established what was then called 'Lighting Design Christian Bartenbach', the engineering office that has meanwhile changed its name to Bartenbach LichtLabor. His work, mainly dedicated to the architecture and patented both in Europe and on a worldwide scale, has led to pioneering inventions such as highly efficient glare free systems technologies, daylight redirection systems and novel sun shading systems. His achievements and publications on lighting technology and lighting design, much appreciated in professional circles, have won him numerous teaching assignments and visiting professorships at European universities.  
[www.bartenbach.com](http://www.bartenbach.com).

### BERGER & BARTENBACH

Christian Berger developed in collaboration with the "Light Research Centre Bartenbach" the concept of the new film light B&B Cine Reflect Light System. Berger used this system first and partially in *THE PIANO TEACHER* and shot the three feature films *DEAD MAN'S MEMORIES*, *NE FAIS PAS ÇA* and *CACHE (HIDDEN)* entirely with the B&B Cine Reflect Light System. Initiate by Prof. Christian Bartenbach and being the result of the cooperation between Bartenbach LichtLabor, Christian Berger and the University of Innsbruck, a master's course will allow a group of 25 students to be trained to become all-round lighting designers in the new established LIGHT ACADEMY.  
[www.lichtakademie.com](http://www.lichtakademie.com)



The development of B&B Cine Reflect Light System has been supported by the Cine Tirol, the Tyrolean Film Commission & Fund organisation.