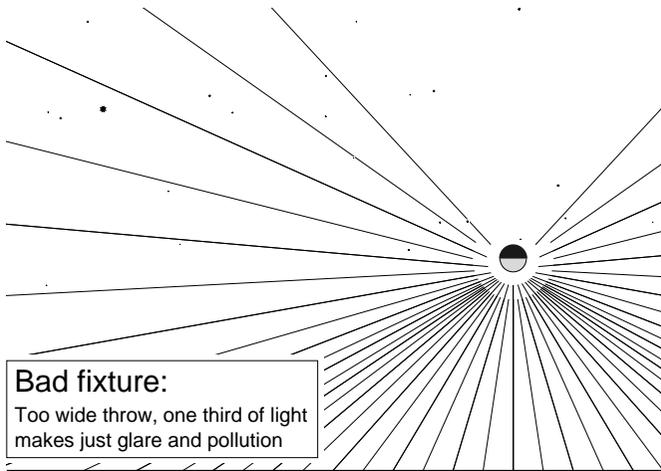
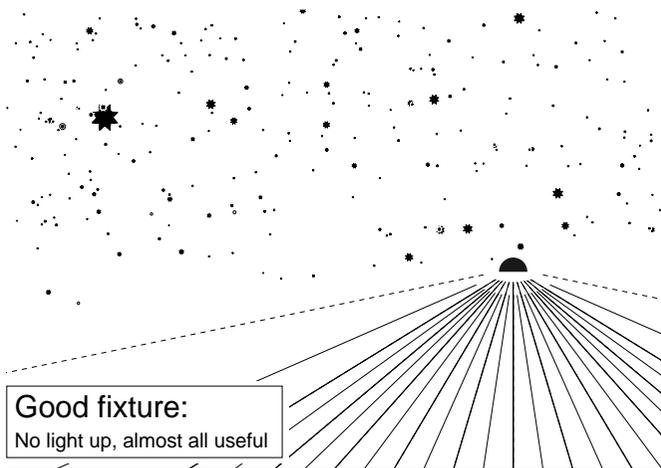


**Horrible fixture:**  
Mostly shines to the sky and eyes, maybe one fifth of light usefully illuminates the ground



**Bad fixture:**  
Too wide throw, one third of light makes just glare and pollution



**Good fixture:**  
No light up, almost all useful



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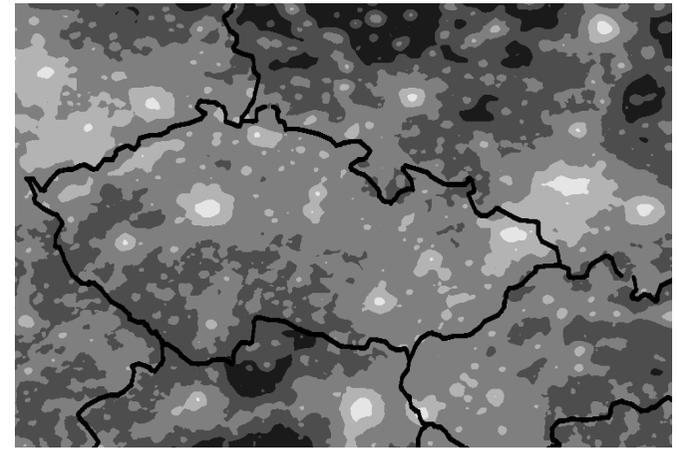
Replacing old fixtures with new ones in Barlovento on Canary islands in 1992 saved two thirds of electricity for outdoor lighting and changed the main square in a pleasant place, where the most apparent thing are not the glaring bulbs any more. The bulbs are still in four-sided “lanterns” – in the old ones, they stood visible among the glasses, in the new ones, they lay in a mirror cavity in the top.

Fig. at the title page: P. Cinzano, F. Falchi (University in Padova), C. D. Elvidge (NOAA National Geophysical Data Center, Boulder), Monthly Notices of Royal Astronomical Society, 2000, ©RAS

(Printed by Czech astronomical society in September 2001. Further information: [www.astro.cz](http://www.astro.cz))

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Let's illuminate just that, what we really want to



A map of artificial sky luminance in the heart of Europe, a piece of the *World atlas of light pollution* – in fact, a map of wasted electricity as well. Even the cleanest region within the map has the sky one third brighter, in the most polluted regions the sky is more than ten times brighter. Details at [www.lightpollution.it/dmsp/](http://www.lightpollution.it/dmsp/).

### Light pollution

is unpleasant,  
harmful,  
obsolete,  
very expensive,

but present here everywhere already.

How to illuminate better? See <http://www.astro.cz/darksky>



Like this (just nicer) looks the sky in the nature,



both images © Joe Roberts, 2000

but like this in a “civilised” one. Bright sky is no necessary consequence of outdoor lighting. It’s a manifestation of electricity wasted for light going to the sky instead down. Further consequences are the lost beauty of night landscape, lack of calm sleep, death of a lot of birds and insects, destroyed environment of nighttime wildlife. Maybe a serious damage to human health as well. Bad lighting makes moving outdoor dangerous, mainly for people with no excellent vision.

It is not difficult to send the light just where it is needed. Fixtures which can do this task have a tempered horizontal glass at the bottom (instead of a round plastic belly) and are called *fully shielded*. They are sealed and equipped by good mirrors, remaining in excellent condition for decades.

Fixtures which do not disturb and just illuminate the room, are common indoors already. Even outdoors we will see better, if the very fixtures cease to be dominant, lest being glare bombs. You can verify that by shielding the bad lamps by your hand for a while. Perhaps you will realize, that the street is illuminated a bit too much.

Quality fixtures are inconspicuous. Such lamps, which shine just down below themselves and not to your eyes, windows or the sky, can be met in countries around us, sometimes even here already.



They need not have a solar panel above them, as the one in Gleisdorf,



nor the Moon by them, as the one in Brno,

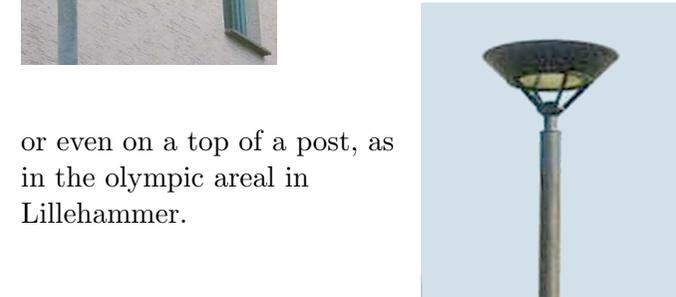


but should be more horizontal than the one in Lillehammer,

can be a simple form, as another in Gleisdorf,



even quite small, as in a settlement in Kassel,



or even on a top of a post, as in the olympic area in Lillehammer.



To save your calm sleep, ask at least for an installation of a shield, as added to an old (not at all exemplary) fixture in Villach. Light disturbs no less than noise.

Light going just the right direction saves more than one third of power. It needs not be full strength the whole night. Another third can be saved that way.

**Using the best available technology can sink the cost of lighting four times.**