

### **Night – the other side of the environmental coin**

As part of my job I have had the good fortune to observe near-pristine night skies around the world and I never cease to be impressed by how well adapted our eyes are to function at levels most people would regard as inky black. When properly dark adapted we can see hints of colour in the sky from recombining atoms at the edge of space, or the faint glow from dust left over from collisions in the early solar system. It is also surprising each time I notice the shadows cast by starlight or the glory of the Milky Way or a bright meteor streaking across the sky. The experience of true night focuses one simultaneously on our smallness in terms of the wider universe, but also increases the sense of self and our embedding in the myriads of stars overhead.

On the other hand, in our towns and cities we inoculate ourselves from our environment through building a cocoon of light that makes us feel secure; this is such a deep-rooted feeling that we illuminate our buildings and structures as a proxy for security even when no-one is there. We see the night sky in much the same way that we used to look on “undeveloped” land – areas of little monetary value such as bog, moorland, coastal areas and mountain tops, though we have come to realise that they have a more lasting value as refuges for plants and wildlife as well as for ourselves to escape the high pressure life most of us have built for ourselves. Currently less than 5% of the land area of the Republic is close to having pristine nocturnal skies, with roughly 6,000 individual stars visible, and fully 18% of our population never gets to be fully dark adapted in their normal night environment and only sees a paltry 150 of the brightest stars, and hence never witness the effect of a truly natural night.

I was struck by Clare Tuffey’s comments in a recent article in *Archaeology Ireland* regarding people’s experience of sunrises at Newgrange and Loughcrew. One of the most striking results of being in an ancient dark space at such a time is that the experience generates a deep feeling and reflection and supporting Edmund Burke’s contention “darkness is more productive of sublime ideas than light.” This connection with the night was shown in an *Irish Times* Citizen Science survey undertaken by 700 people over the past year and one of the striking results was the large number of respondents (80%) who have either attended, or plan on attending, a night-time event. Such events could cover a range of activities such as night walks/runs, paddling, or story-telling, as well as viewing of the night sky and bring people – particularly young people – in contact with the night-time environment. Such activities are already underway, particularly during the Mayo Dark Sky Festival (to be held over 1<sup>st</sup>–3<sup>rd</sup> November this year), and the impact – especially on overcast nights when it can be even darker – on folk who normally do not go out at night is impressive. Additionally, the event brings in people from further afield, leading to over 350 bed-nights and much-needed off-season income to the local community.

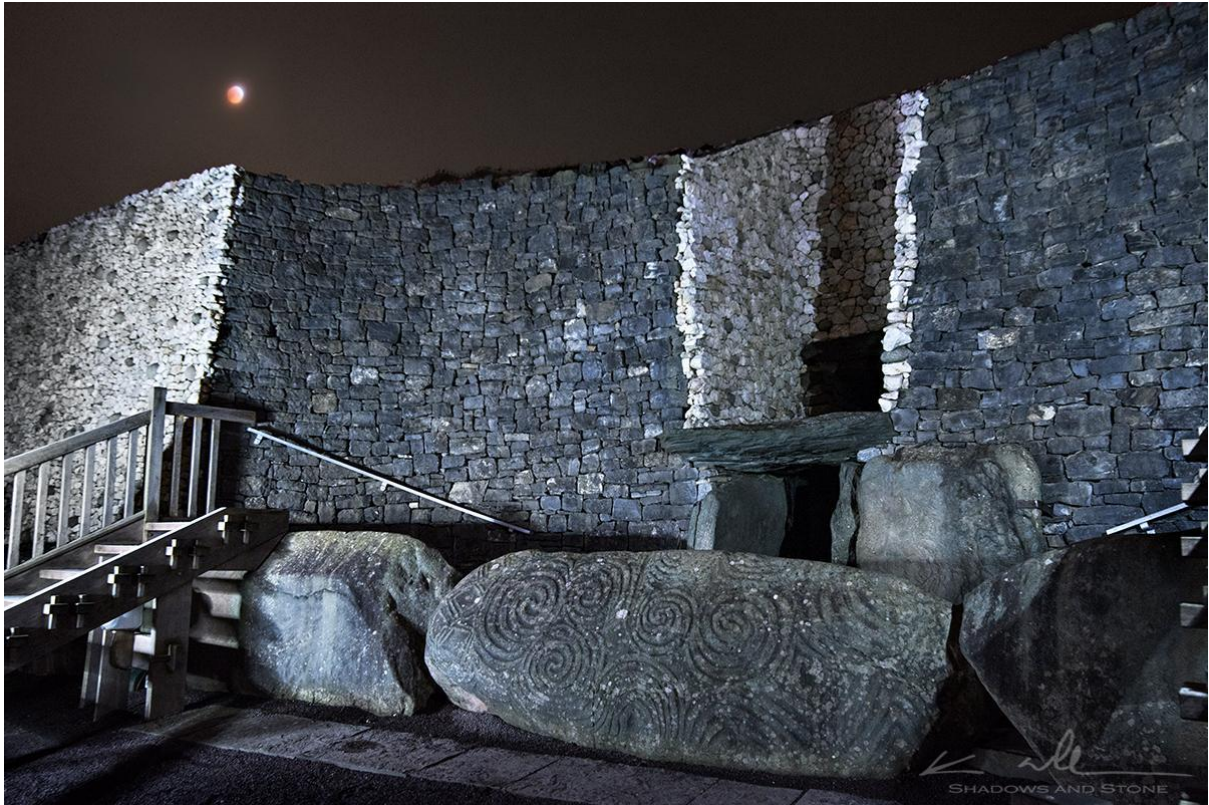
In the US, the National Park Service uses the motto: “Half the Park is after dark” as a way of reminding people that the night-time environment is as important as the daytime one, and UNESCO has two initiatives aimed at preserving night-time environment: the Astronomy and World Heritage Thematic Initiative for astronomy-related sites such as Newgrange, and the BiosphereSmart Initiative for Dark Sky locations such as our pristine Gold Tier sites of Kerry Dark Sky Reserve (which includes the Skelligs World Heritage site) and Mayo Dark Sky Park. Frank Prendergast has argued for the importance of the sky in prehistory, linking the underworld with the heavens above. In this

context, preservation of our ancient monuments requires protecting the night-time environment as much as the immediate surroundings. Imagine the feeling you would get when viewing the Milky Way as our ancestors must have done over Newgrange or Knowth, or from a hut in the Céide Fields as the surf strikes the cliff nearby, or the majesty of a timeless moonrise over one of our other heritage sites such as Glendalough. The awe induced by these visceral experiences provide a way to connect people intimately with their past and to reflect on the connection of these experiences to their own lives. There is a plan to include the sky-aligned Beaghmore Stone Circles in County Tyrone in a dark sky area and, hopefully, other sites around the country could also follow suit.

However we should also consider not only direct protection of dark spaces, but our responsibility to the environment more generally, particularly with regards to public lighting including of public structures and monuments. Aside from the effect of lighting on its immediate environs, light can propagate far into the surrounding countryside, leading to deleterious impacts tens of kilometres away. Measurements show that public lighting accounts for the majority of the light emitted, and façade and architectural lighting of bridges etc can generate light out of proportion to the amount of energy used - in Dublin, for example, the lighting of public buildings alone accounts for roughly 4% of all the light emitted to space from the inner city. Light has great benefits for modern life, but it should be used responsibly and limited to intensities, locations, and times where really necessary.

While the introduction of better shielded LED technology can lead to improvements in respect of both energy use and light spill, the main energy savings will accrue from reduced light levels or times. Consider that the prevalent blue-rich light is installed to the same visible light level (lumens) as older lights, but produces more light in the blue part of spectrum to which our night vision is sensitive: we can therefore achieve similar levels of visibility with reduced light and energy use. We should look anew at how we are using light as it becomes increasingly apparent that higher levels of light- particularly blue-rich light - can have deleterious effects on sleep and health. To put it in another topical context: if we could produce more plastic more cheaply, should we do it?

To close I can only quote David Attenborough: ““No one will protect what they don't care about; and no one will care about what they have never experienced.” We should consider protection of the night-time sky as a natural part of our culture and heritage and as part of the educational experience for the general public. If we are more sensitive to night-time light we will not only save energy and help achieve our climate change targets, but we could open up a new approach to tourism.



The eclipsed Moon seen over Newgrange on the night of 20-21 January 2019. Image by Ken Williams.



Knowth timber circle imaged by Ken Williams



Astronomy and World Heritage Thematic Initiative for astronomy-related sites

<https://whc.unesco.org/en/astronomy/>

UNESCO BiosphereSmart Initiative

<https://www3.astronomicalheritage.net/index.php/resources/dark-skies-info>