Rescaling Wylfa
Dr Laura Coucill, Manchester School of Architecture
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Is the countryside the largest industrial landscape? Spaces perceived as rural are home to some spatially extensive and highly productive activities. These support various and continually evolving forms of the urban condition, yet the introduction of large infrastructures in the 'natural' landscape is often met with controversy.

Whilst there have formerly been vast industrial changes in the countryside, such as the ubiquitous enclosure of open land into hedged fields for agriculture these are not typically perceived as strikingly synonymous with widespread industrialisation. The technologically triumphant post-war period which serviced the rapid amelioration of 19th century urban industrialisation, however, is more commonly associated with an influx of industrial landmarks in the British countryside. In her book, *Landscapes of Power*, Sylvia Crowe remarked how modernisation had led to structures prodigious in number, distribution and size, invading the countryside[1]. She principally refers, of course, to the siting and construction of new forms of energy generation and in particular the commercial atomic revolution.

The United Kingdom Atomic Energy Authority (UKAEA) were responsible for developing reactor types for the First Power Programme, known as MAGNOX after the magnesium alloy used in the fuel rods. Siting criteria for reactors was specific; the size and mass of the reactors required careful consideration of appropriate substrate for footings and proximity to cooling water was highly desirable. Both these characteristics typically meant that populated areas were out of the question. Coastal areas were often favourable for their access to cooling water, and especially in locations where the natural geology provided a solid bedrock foundation. Undoubtedly such criteria fuelled conflict between the prospect of universal power distribution and the protection of scenic value. Objections were not solely against edifices unparalleled in size and function, but were also directed towards the ground-based network of the National Grid, distributing energy.

The Central Electricity Generating Board (CEGB) commissioned the design and build of this initial wave of commercial reactors[2], from the very first station to contribute to commercially generated atomic power at Calder Hall, West Cumbria, to Wylfa, located on the Isle of Anglesey, North Wales, which was the last to be built as part of this first wave. As unchartered territory, all stations in the programme were the output of close coordination between several design and engineering consultants. An instrumental part of the design team at Wylfa, alongside Farmer and Dark Architects, Crowe was said to have strongly advocated design cooperation and commanded great respect

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[1] Crowe (1958) *Landscapes of Power,* Architectural Press, London.
[2] UKAEA (1969) British Nuclear Power. UKAEA, London.

amongst her colleagues[3]. Wylfa is arguably the most considered and successful ensemble of station and landscape. In 2016, a local gallery held tribute to the station's final productive days by hosting an exhibition to celebrate its contributions to the island, as well as objections toward nuclear power more generally[4]. Perhaps it was the rehearsal of such design team coordination in pervious projects that culminated in the curation of this revered reactor nestled in an Area of Outstanding Natural Beauty.

The largest of the series in terms of energy output, Wylfa also exhibited some of the most advanced features in the reactor series: being the second station to have the reactors and steam generators contained in pre-stressed concrete construction. It is unsurprising the formal qualities of these spherical vessels, pinnacles of reactor technology at the time, are expressed in the geometry of the reactor housing and that the site was specifically coordinated by Crowe to showcase this. Described in her 1962 *Wylfa Landscape Report* for the CEGB, Crowe considers the appearance of the site from all vantage points. She explains how the view from Wylfa headland should "be dominated by the station, and the drama of its scale should be given full play."[5] Special consideration, she goes on to say, should be given to the location of roads and perimeter fencing from these view points. Walking the coastal paths, which predate the station, but were extended by Crowe, the heroic positioning of the reactors is a spectacular sight, further augmented by the omission of fencing along the seaward perimeter. Invisible boundaries defined by the landscape are without the visual signifiers of dangerous territory and allow site to contently display its majestic forms and function.

Ancillary buildings, in contrast to the reactor house, are purposefully less remarkable and located landside. With views considered from populated areas in addition to long views from distant peninsula, ancillary buildings are arranged and shielded in the landform. In a 1960 paper titled *Power and the Landscape*, Crowe articulates her dislike for "the spiky, disintegrated shapes" of sub-stations which "spread monotonously over too great an area."[6] With stations rendered obsolete without one, again at Wylfa she notes, "The sub-station presents a greater problem than the reactors because its great area will over-ride the contour patterns of the terrain."[7] Her solution: to sculpt the land using 500 cubic yards of spoil made available from the site which would conceal the substation from certain vantage points, while creating a foreground from which the building emerges in other views.

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[3] Grove-White (2015) *The Landscape of Power, Sylvia Crowe at Wylfa*, in Spence (ed), *Landmarks*. Design Commission for Wales, Cardiff.
[4] Power in the Land (2016) Oriel Davis Gallery, Llangefni.
[5] Crowe (1962) *Wylfa Landscape Report*.
[6] Crowe (1960) *Power and the Landscape.* JILA
[7] Crowe (1962) *Wylfa Landscape Report*.

Decisions to create a seaward frontage in what Crowe describes as the “finest part of the landscape”[8] tell the story of highly curated, explicitly modern landmarks: edifices that are a clear product of their time and role in burgeoning technological advancement. It is not surprising that prominent architects of the time were tasked with exploring how such unprecedented infrastructure should be integrated in the landscape. Wylfa is the embodiment of recognising power stations as a “new focal element in the landscape”[9]. Each station in the series was distinguished, with its geographic context and topography taken into consideration. Equally, alongside landscape setting, each station symbolises and makes manifest the technology and legislation of the epoch: from the air-cooling methods via cooling towers at the initial Calder Hall, to the manicured views of Wylfa, the countryside is home to some of the most remarkable industrial interventions, which range in distribution and footprint, from those so vast they are imperceptible, to those prominently condensed, coordinated and celebrated as landmarks.

At the end of its extended lifespan and after over 40 years of safe operation, Wylfa’s reactors ceased generating activity in December 2015. In the future, as with Basil Spence’s Trawsfynned and other works of genuine design collaboration, decommissioning will see Wylfa reduced to two structures protecting the reactor cores. Their scale, proportion and prominence diminished in a landscape designed to feature them. Crowe’s visual acuity for integrating new infrastructures was ahead of the curve. With today’s increasingly standardised technologies offering diminished capacity for the close collaboration of design teams in developing bespoke solutions, such as those at Wylfa, what will the future countryside look like?

[8] Ibid
[9] Ibid

I have a variable named Esteem that is in a scale 1:7. I would like to rescale it to 1:100. I understand that the R program scales can do so, however I am having problems with the syntax. Could someone provide an example of how can I rescale that variable? Also, is there a tool that I can use in R Commander to do that? Thanks very much! MAF Rescaling. Table Rescaling. Load Compensation / Injector Pulse Width Compensation. IAT Compensation. SD Calculations. WOT best VVT. Log statistics (learning). Log view, WOT comparison, and map tracing (replay).