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## **A big dish tastefully presented**

### **Science & Spectacle: The Work of Jodrell Bank in Post-War British Culture**

Jon Agar

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The Jodrell Bank radio telescope became a symbol of national prestige and technical capability in Britain during its construction in the 1950s and beyond. As Jon Agar argues, such emblems do not develop spontaneously, but are the product of social and political machinations. The telescope was portrayed variously for different audiences ranging from funding bodies to the (generally troublesome) public. This marshalling of the public image is one of his book's principal themes, as is the gradual rise of authority of the astronomers that represented the instrument. Not a story of 'big science' – of "money, manpower, machines, media and military" [p. xi] – this is an analysis of a costly but essentially academic programme that wended its way through the corridors of government and industry.

As befits the study of a spectacle, the book itself is attractively printed (although marred by more than the usual sprinkling of typographic errors, particularly in the footnotes). Written in a sparse, focused style, its scope is simultaneously wide and selective. Its particular approach makes the book a valuable addition to the historiography of Jodrell bank and radio astronomy.

Previous accounts have served rather different purposes and accentuated different themes. The first 'history' of the Jodrell bank telescope was the film The Inquisitive Giant (1957). Presented as the story of "a cloudy country recapturing 'pre-eminence' in astronomy from the United States" [p. 215], the £10,000 film was intended as international publicity for British science and technology. The veracity of the script – developed well before the instrument was even operational – was contested by the historical actors themselves, including the Director of the telescope project Sir Bernard Lovell, its chief engineer H. Charles Husband, the Department of Scientific and Industrial Research (DSIR) and the Foreign Office.

Lovell's 1968 *The Story of Jodrell Bank* was the first book about the radio telescope. A detailed account written with candour, it attempted to justify the importance of the instrument, the technical decisions taken, the problems of funding and the spiralling construction costs. Partly a response to a decade of often negative

press coverage, its Director's account described "a great and patriotic scientific endeavour overcoming obstacles such as inclement weather, refractory and striking builders, and opposition from within government" [p. 31].

On the other hand, David Edge's & Michael Mulkey's 1976 *Astronomy Transformed: The Emergence of Radio Astronomy in Britain* centred on three research centres and the scientific problem of astronomical radio sources. In so doing, they explained technical choices and the emergence of the discipline of radio astronomy in terms of social groupings of astronomers. Although sympathetic to their sociological approach, Agar argues for a much larger set of social bodies. He largely by-passes the intellectual development of research at Jodrell Bank to concentrate on how the astronomers dealt with the 'outside world'.

The first concern of the nascent radio astronomers beyond the physics and engineering of the instrument was funding. Requests for support from the loose research council structure, augmented by DSIR involvement, was carefully tuned to prevailing politics. Cold war rhetoric proved subtly influential. Funding was sought, for example, by arguing that the radio telescope, like the once esoteric radar devices, might some day have a military use. Early (and expensive) design changes to the concept involved operation at shorter wavelengths –to observe not just the 21 cm wavelength radiation of hydrogen, but at 10 cm or shorter, allowing the telescope to pick up radar signals. The expensive provision of a fully steerable dish was also supported by its potential for use in a distant early warning system before the completion of the coastal radar network in the 1960s. Both design features gave Jodrell Bank a claim to a role as part of a ballistic missile tracking system. Defence applications of the telescope made its purpose heterogeneous and malleable, as did promotion of its prestige value: Lovell argued that the dish was comparable in status to the US and Russian satellites planned for the International Geophysical Year (IGY), and that it could play a key role in the radar tracking of eventual Russian moon rockets. Indeed, the hurried preparation of the new telescope for the tracking of Sputnik in 1957 was a major propaganda coup for the engineers and astronomers of Jodrell Bank and for Britain itself. Even the more 'scientific' applications of the instrument were refined to sway funding bodies. The tracking of meteor showers had less power to elicit funds than did claims about mapping the expansion of the universe, which were deemed to be of cosmological import.

Government support was also crucial for gaining some control over the allocation of 'quiet' frequencies in the radio spectrum. Frequencies were increasingly being 'occupied' by local emergency services, aircraft navigation systems and the like. Even more disturbing was the broad-band electrical interference caused by automobile ignitions, electric fences, the electrification of nearby rail lines, and the

extension of the power distribution grid. The appropriation of this 'frequency space' had a 'geographical space' analogue. The astronomers sought influence over the planning in semi-rural Cheshire, which was threatening to be increasingly urbanised by the population 'overspill' from Manchester. Astronomical events could be "confused" or "obliterated" by electrical noise from cars at a nearby pub, Lovell argued, documenting his claim with pen recorder tracings that only the radio astronomers could interpret meaningfully. Networks of political influence determined 'gentlemen's agreements' between the Department of the Environment, Cheshire County Council, Manchester University and the Science Research Council which kept most disturbing activities outside a six-mile radius (determined rather contingently, it seems, by the distance of the surrounding towns and villages of the mid 1950s).

These set piece topics of financing, spectacle, interference and spatial control are discussed very convincingly. Yet a mild criticism is that we are not presented with a rich picture of the public perception of the instrument. Protests about Jodrell Bank's thwarting of local urban development are covered; so, too, is the public rhetoric directed by the project leaders at the general public. But analysis of the different publics, and their reactions, does not extend beyond Lovell's own categorisations (imported from the great optical telescope facilities in California) of the types of visitor to such sites. A too-brief exception is an amusing selection of crank letters sent to Lovell after the launch of Sputnik, which clearly support his general description of the public as a source of destructive "interference".

Agar is successful in his aims of demonstrating the "mobilisation of a progressive national symbol at particular moments of post-war change" which "cannot be fully understood without locating it in the dynamic context of post-war Britain" [p. 225]. His version of the dish, particularly in combination with earlier treatments, is both elegant and satisfying.

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