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'Not one voice speaking to many': E.C. Large, wireless, and science fiction fans in the mid-20th century

Charlotte Sleigh, Professor of Science Humanities, University of Kent

c.l.sleigh@kent.ac.uk

Abstract

In this paper, E. C. Large's 1956 novel *Dawn in Andromeda* is examined, using literary analysis, as a work of public history of science. The novel recounts how God places a pioneer population on a new planet, challenging them to work from nothing to the creation of a 'seven-valve all-wave superhet wireless' in a single generation. On a general level, this article presents *Dawn in Andromeda* as a history of science firmly rooted in the human and material efforts of engineering. As such, it is shown to chime more particularly with the hopeful definitions of science explored by wireless enthusiasts and the first generation of science fiction fans in Britain during the 1930s. However, the optimism of the 1930s is not borne out by the novel; ultimately, *Dawn in Andromeda* satirises the wireless as a form of corrupted science that did not deliver what the fans had hoped for.

Short description

This article analyses E. C. Large's novel *Dawn in Andromeda* (1956), using it to explore the cultural history of the wireless. In the 1930s the wireless figured as an instrument of fannish participation alongside participatory writing practices. By the 1950s it had become a disappointment.

List of keywords

E. C. Large, wireless, science fiction, *Dawn in Andromeda*, fans

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Introduction

Lewis Dartnell's 2014 book *The Knowledge* challenged its many readers to ask themselves how they would go about re-building civilisation if the world were to suffer some kind of apocalypse. 'How do you grow food, generate power, prepare medicines, or get metal out of rocks?' he asked them; '[c]ould you avert another Dark Ages or take shortcuts to accelerate redevelopment?' (Dartnell, 2014, cover). Amusing and engaging online promotional videos demonstrated, amongst other things, how to remove the lid from a tin of beans without a tin opener. (What kind of apocalypse it would be that destroyed the world's stock of tin openers while leaving tins themselves untouched is not discussed.) Amidst all this fun, one review of *The Knowledge* stood out as different. The *Guardian* described the book not as a how-to guide, but as a 'terrifically engrossing history of science and technology' (Poole, 2014). For reviewer Steven Poole, the book was not about the future, but was a sympathetic reconstruction of how past people developed 'farming machinery, clocks, steam engines, glass lenses, radios, explosives, and the like' (ibid).

Sixty years earlier, E.C. Large's *Dawn in Andromeda* (1956) was based on a similar challenge:

Five men and five women, all English, walk out of the sea one misty morning, on a small uninhabited planet in the galaxy of Andromeda ... The party have between them a great deal of modern knowledge of the useful arts and sciences, and God, for his own inscrutable reasons, has set them the task of making a wireless set – a seven-valve all-wave superhet – in one generation, starting naked from the sea (Large, 1956, cover).

Writing for *The Tablet*, J. J. Curle assessed the book as ‘an excellent variation on a theme as old as the first civilisation—how do men start again from bedrock if civilisation collapses?’ (15 September 1956, p 13). Angela Milne, in *The Sketch*, gave a specific example of the textual tradition in which it sat, calling it ‘a kind of up-to-date Swiss Family Robinson’ (18 July 1956, p 94). Others inevitably mentioned Defoe’s *Robinson Crusoe* (*Discovery*, 1956, p 438). Like Poole on Dartnell, at least one reviewer saw something more serious afoot in the novel. ‘To describe this novel as Science Fiction would be misleading’, claimed Daniel George in *The Bookman*; ‘Its science is real’ (quoted in *The Observer*, 8 July, 1956, p 9).

It is this paper’s contention that *Dawn in Andromeda* is worth taking seriously as a commentary on the course of historical science, and as a commentary on the nature of science itself. To think of SF in relation to history is not new; the critical theorist Frederic Jameson long ago referred to SF as a ‘symbolic meditation on history’ (Reynolds et al., 1974 p 275; see Freedman, 2000, for a more recent example). However, Jameson’s remark is part of an idealised, text-centred tradition of criticism whose historicism is based within a non-conscious framework. The reading I propose is embodied (perhaps precariously) in historic readers and fans. To put it another way, this paper takes science fiction as a kind of public history of science. This is a rather new approach to science fiction, shared by the ongoing major research project *Unsettling Scientific Stories* (Morris et al, 2016), with which this paper is in dialogue. Rather than treating science fiction as a reflection upon on science (Haynes, 1994), it treats it – its authors, texts and readers – as being in active cultural dialogue with it.

The mode of historical enquiry necessitated by this move to understand fiction as public history is necessarily literary-critical in nature. Textual approaches are, in fact, generally required for understanding the first generation of science fiction fans as commentators on science. Its members have not, in general, become historical figures of the sort whose archives are retained (although notable exceptions include Arthur C. Clarke, Christopher Samuel Youd and Eric Frank Russell). Most were nobodies, and so most of what historians – or literary critics – have to go on are the texts comprising their fanmags.

To understand what Large’s text says about the nature and history of science, this paper focuses on the extremely specific definition of scientific success that God sets his experimental subjects. They must make a wireless, but not any wireless: it must be a ‘seven-valve all-wave superhet’. Large’s wireless, so to speak, can be tuned to two frequencies. The first tunes in to the optimistic generation of science fiction fans that picked up on his earliest novels in the 1930s. They were makers, doers, participators in science. The second tunes in to Large’s dissatisfaction with the results of this pre-war wave of science; its chief product, the wireless, was now used to broadcast patronising, didactic knowledge, actively discouraging the kind of anarchic participation that characterised the activities of his early fans. The late 1930s (history, from the point of view of *Dawn in Andromeda*) are the focus of the paper: the period in which the science fiction fans became self-

aware and got organised; the period in which Large's first novels came to the fans' attention; and last and not least the period in which the seven-valve all-wave superhet came to dominance.¹

Frequency 1: Large amongst the fans

During the 1930s a new, self-aware group emerged in Britain: science fiction fandom (Hansen, 2016; Sleight, 2016). They were young men, even teenagers, based in industrial parts of Britain, notably Leeds, Liverpool and the Midlands. Galvanised by the imported American pulps, they gathered together to discuss science fiction, and to publish their thoughts upon it and sundry related matters. These young men, moderately educated, and from a variety of class backgrounds, created eddies in the historical mainstream of twentieth-century scientific media. Their magazines ('fanmags') were produced domestically or on the sly at work; with their hand-cranked duplicators they attempted to participate in the overlapping worlds of science and the published word.

There is, alas, no evidence of Large ever having engaged on a personal level with the science fiction fans; he did not, so far as anyone knows, attend the earliest science fiction conventions of the late 1930s. However, his name was noted amongst the fans. His first novel in particular (*Sugar in the Air*, 1937) was known by them for its excellence. Douglas F. Mayer's editorial in *Tomorrow* (1937, p 3) gave thanks for 1937 as an *annus mirabilis* of science fiction, with Large's novel, alongside H.G. Wells' *Star Begotten* and Olaf Stapledon's *Star Maker* 'a gift from the gods'. *Sugar in the Air* was, apparently, the nation's second-best seller for one week, just behind Wells (Hanson, 1937, p 13). Serious-minded readers connected *Sugar in the Air*, a cautionary tale treating the brutal triumph of commerce over the idealism of the scientist, with real-world attempts by Ritchie Calder and others to integrate science into the solution of social problems (Anon, 1938, p 12).

Large's success with the fans was due in large part to his interleaving of the real world and fiction, of science and text, in a way that spoke powerfully to their ambitions. For the fans, participation in science was conducted through the written word. Frederik Pohl (2013) has captured the fannish will to publish in his recollections:

My ... friend ... and I had long before decided that that year [1938], or one nearby, would be the time when both he and I cast off our fannish plumage and revealed ourselves as SF pros assoluto [sic]. 'Writer' had a lilting beauty as descriptor of our futures. 'Editor' conveyed... a certain majesty. 'Publisher' was more majestic still ... (Pohl, 2013, p 4)

Fans were able to play at all these roles in the production of their home-made magazines (Sleight, 2016), and indeed discussion of their publishing activities often came to dominate in those magazines over and above their notional subject matter, science fiction. Large's writing life gave the fans, perhaps, grounds for hope, since *Sugar in the Air* drew on his life as a bona fide research chemist. The fan Denny Jacques attempted something similar, using his knowledge of organic chemistry to create his earnest three-part series 'Coal-Tar Cosmos' for readers of the fanmag *Novae Terrae*.²

Made redundant by the failure of the chemical factory at which he worked (Large, 1973, p 2), and wishing to try his luck at professional writing, Large created a fictional double, C. R. Pry, a scientist who wishes to be a writer. *Sugar in the Air* relates, as a corollary to Pry's/Large's failure as a scientist, the means by which he succeeds as a writer. The follow-up was even more complex in its authoriality (on authoriality see Sleight, 2010). As Stuart Bailey puts it, *Asleep in the Afternoon*

(Large, 1938a) is a 'meta-sequel' that picks up where the first novel left off; it 'proceeds to continue, duplicate and mirror it all at once' (Bailey, 2008, p 87). It follows Pry's subsequent efforts to write a novel, *Asleep in the Afternoon*, whose substance is the substance of Large's own novel, *Asleep in the Afternoon*. Large's first two novels thus formed their own reality in just the way the fans, albeit with less finesse, dreamed of doing: 'abstract form of text-as-thought and physical form of book-as-object' (Bailey, 2008, p 87). Towards the end of his life, Large had recomposed his autobiography as being the path of a novelist trying his luck with science: to 'show the high and mighty Professors of Plant Pathology that I, an insignificant novelist, could ... tell the whole history of plant pathology a great deal better than could they themselves' (pp 78-9).

As Robin Kinross observes, in Large's writing 'we feel the writer is watching himself write' (Bailey and Kinross, 2008, p 10).³ This is a perfect description of the fans' writing also, albeit in less skilful form. Denny Jacques concluded his first essay on the 'Coal-Tar Cosmos' with his own reflections on organic chemistry as a source of sweetness: 'Another interesting product is saccharin ... It is termed the "sweetest thing on earth" (cf. the beautiful girl in many science fiction stories).' With sophomoric clumsiness he concluded: 'On this note of levity the present article must end' (Jacques, 1936, p 6). As for Large's writing, so for his reading: the world and the text were interleaved. Large described his own mode of reading (no doubt mischievously) as one of ignoring the argument, but rather an exercise in trying to reconstruct the author as a character in his mind (Large, 1938b). With such complexities afoot, it is no surprise that in Large's novels, fans found a particularly talented creation of the science/text hall of mirrors that they commonly inhabited (Sleigh 2016).

As Peter Bowler has shown (2009), the world of science fiction overlapped considerably with that of wireless enthusiasm (figure 1). Arthur C. Clarke (1996), photographed as a child with his home-made set, is a particularly well-known example. Leonard Kippin, co-founder of the first fan club, was a radio buff, and Douglas Mayer's precociously-named Institute of Scientific Research in Leeds incorporated two pre-existing radio clubs. There was, moreover, an overlap between magazines treating radio-related topics and those dealing in both non-fictional futurism and scientifiction. The publisher Hugo Gernsback was in one way or another involved with a dozen separate radio magazines, along with other science and mechanics titles. Archibald Low, a contributor to science fiction fanmags and first president of the British Science Fiction Association, was emblematic of the crossover in Britain. His own publications catered to young, often male, science fans, while his industrial research covered topics in sound and wireless communication and control. Home-made sets were on the decline by the 1930s, but the lure of the crystal still drew a good number of children – mostly boys – into the world of science and communication. (*Wireless World* ran occasional features on the construction of crystal sets into the 1930s). Had *Dawn in Andromeda* been written at the same time as Large's first two novels, that is, the late 1930s, his selection of the wireless set as acme of scientific civilisation would have been a fond, witty and plausible choice for his fans.

More specifically than this, the superhet was an appropriate choice too. Amongst fans and consumers, the superheterodyne, or superhet, wireless receiver set had come to dominate by the 1930s. As radio stations increased in number, crowding the bandwidth, the superhet provided one way to tune in accurately to a station occupying a small part of the spectrum. It did so by imposing an intermediate frequency (IF) upon the carrier signal (RF), thus creating an emergent, third wave, whose amplitude modulations could be translated by the receiver into sound. Historian Keith

Geddes puts it beautifully: 'In effect, the waveband is shifted across the receiver, rather than vice versa' (1991, p 103). The story is of course more complicated; as Bussey describes (1990, pp 18-19), the first superhets (figure 2) actually *caused* problems in precisely the technical aspects that retrospective histories claimed they solved. However, in the 1930s a second generation of superhet became the standard basis of pre-assembled wireless sets, enabling selective and accurate tuning in a crowded spectrum.

For readers of *Wireless World*, ease of tuning to multiple stations via the superhet was big draw. The journal published monthly lists of the frequencies of European stations, and there was frequent discussion of what could be heard on them. The 'all-wave' aspect of a set referred to its ability to pick up short wave signals in addition to the medium waves that conducted signals from Europe. Again, *Wireless World* obliged with the list of stations – on this frequency, worldwide – that could be found across the dial. The magazine explained the doubling of membership in the Radio Society of Great Britain between 1931 and 1937 as being due, largely, to an increasing interest in short-wave reception (5 February 1937, p 124). For a period, all-wave wireless seemed to be opening up the world.

Wireless, like writing and publishing, was a way to participate in science. For one thing, readers of *Wireless World* were quick to write in with their opinions about policy, regulation and planning of wireless transmission. Judging by the letters pages, its regular columnists did a good job of voicing many of the hopes and frustrations of readers, too. Moreover, wireless technology provided a forum in which enthusiasts could experiment on principles that blurred the boundary between technical and fundamental:

In well-equipped laboratories experimenting is dignified with the title of RESEARCH (with a capital 'R'); in the home it is generally called '*tinkering about in the workshop.*' Sooner or later we all come to it. The home-constructor of *The Wireless Word* sets tries a valve or component different from that given in the published design ... and at the moment that a written note or record of a result is made, such 'tinkering' is entitled to the status of *Experimenting*, no less than the work in the research laboratories ... (*Wireless World*, June 4 1937 p 542).

In the fan magazines, tinkering was generally restricted to theoretical calculations about space travel; in wireless, it could be done for real. It is exactly this kind of tinkering that Large uses to reconstruct the history of science in *Dawn on Andromeda*. Discoveries are entirely practical, and the emphasis is always on the materiality and sheer hard graft of the process. The methods by which the group tries to make are an early example in the book, described with careful detail (pp 21-33). Large had made his family try them out too, tinkering for themselves so that he could write about them with real know-how (Large's daughter: personal communication). Here, Large's characters calculate how to obtain sufficient friction to make fire:

'The mechanical equivalent of heat, on earth,' said Plan Raym, 'used to be 778 foot-pounds per British Thermal Unit ... That means the amount of work I'd have to do to haul ... you up to the top of these cliffs ... would be just about enough to raise one ounce of wood to 700 degrees Fahrenheit, at which temperature it might ignite' (p 21).

Plan is forced to concede that the absence of something as simple as rope makes this impossible. Eventually, the colonists construct an ingenious 'fire-making machine', 'primitive' but also 'very powerful', described in impressive and convincing detail. In the end, however, the machine counts for nothing; it is the sheer doggedness of the blacksmith, Sars, using a simple stick in his hands, that wins out:

It wasn't the special stick that made the fire. And it wasn't science. Science would only come lumbering along afterwards, explaining things. It was faith that made the fire. It was Sars' dumb faith in himself. It had never once occurred to Sars that he, a blacksmith, could not make a fire. So he had kept on, just that little bit longer, after any of the others would have tired (p 33).

The description of science 'lumbering along afterwards' is shortly proved correct, with Sord, the party's scientist, explaining – almost explaining *away* – the achievement of the bloody-palmed Sars by reference to the special properties of the wood that he used (p 33). Large's mission, to recreate the history of science through the hard work of the hand and the tinkering mind-set of the engineer, extends through the refinement of iron, the search for rare earth metals, and many more feats in the novel. In respect of its scale it recalls Wells' various excursions into the 'outline' of history, except that Large's account is by no means as positivist as Wells'. 'History is no exception amongst the sciences ... the clustering multitude of details dissolves into general laws', writes Wells (1921, p vi), but nothing could be further from Large's vision. Large's reader must be impressed not by general laws but by a realisation of the sheer materiality that enables the transmission and reception of radio waves: the metals, the vacuums, the glass-ware – not to mention such basics as measurement of time and space.⁴ The wireless circuit diagram, scratched out in early days 'before they forgot' (p 83), is really the least of it. A discussion between the men of the party examines the theme. Scientist Sord remarks: 'Do you realize that if we were to forget to write down the binomial theorem it would be lost for ever?' (p 90; *ibid* for remainder of paragraph). The remark smacks of hubris, and is faintly ridiculous, uttered as it is beside a campfire and the remains of a roasted pig. Gun, the doctor, proposes an alternative method: '... don't bother about that [i.e. writing it down]. It's much easier to do it biologically.' Prompted to explain, he advances the notion of continuing what they have begun: 'begetting a lot of children as quickly as possible, and leaving it for them to pick up and carry forward.' In other words, it is a question of training up the next generation. Verbs – actions – predominate: beget, leave, pick, carry. His euphemised pity for the next generation – 'poor little baskets' – repeats the theme; the emphasis is not on the abstracted knowledge that must be carried, but on the physical acts of carrying – the 'doing' approach of the engineer.

In this scene, the conversation then turns to the wireless as exemplar. Sord asks the doctor whether he ever made a wireless set in his previous life on earth, indicating that he himself did: 'It was pretty interesting: the making and the theory of it' (p 90; *ibid* for remainder of paragraph). Somewhat to Sord's surprise, Gun says that he did too, even bettering him by having constructed 'a sort of time-base for a television tube' (as mid-1930s readers of *Wireless World* might have done). The wireless is the shared point of origin for their subsequent development: the one as a scientist, the other as a doctor. But Gun puts the wireless firmly in its place as a juvenile activity; his enthusiasm came 'just after the stage when I wanted to be an engine-driver'.⁵ Finding 'there was nothing much in it – just some valves and a few tuned circuits', his attentions turned to biology. Indicating the gnats dancing around the fire, Gun comments: 'On one sip of plant-sap it can buzz for hours. You make me an

engine like that, and I'll begin to admire your science ...'. Here again is a sort of theory – almost Spencerian – about the internalisation and carriage of knowledge in humans qua biological agents.

Notwithstanding this final step from wireless to biology, a clear picture of science emerges in *Dawn in Andromeda*. It is the kind of science that fans of the 1930s endorsed: practical, tinkering, collaborative, entrepreneurial. It was the science of the wireless: one science in which fans and amateurs could plausibly participate.

Frequency 2: Large among the critics

On 4 June 1937 *Wireless World* carried a review of 'An Efficient Three – Waveband Superheterodyne Chassis' made by London manufacturer McCarthy. The review was moderately positive, citing 'an efficient performance ... provided without unnecessary frills' (p 534). The wireless snob, perhaps, would not be satisfied; a final piece of faint praise was delivered in the judgement that 'the set will look well in any cabinet which the purchaser may choose for it'. Archibald Low sneered similarly in 1924: 'do not forget we must have our cabinet with a fern upon it ... if we are to be successful. Business always leads science, as we know' (p 18). Aesthetic value was not something that the robustly masculine *Wireless World* generally highlighted; here, then, was a set for the consumer, the family: a room in which women sat.

McCarthy was a regular advertiser in the paper during this period (indeed, perhaps *the* most regular in the period 1936-8) and two weeks later (18 June 1937 p 589; figure 3) the firm capitalised on its review by beginning a run of advertisements for the model. The second most expensive in their range (£10 17s 6d, very roughly £500 in today's money), it was pitched in exactly Large's phrase: the 'NEW 7-VALVE ALL-WAVE SUPERHET'. 'Superhet' was a term much bandied about in advertisements, though it is not clear that ordinary consumers had any idea what it meant. In long form (super heterodyne) it spoke of science; as a portmanteau term, of the even more modernist science fiction. Occasionally it was rendered as 'supersonic heterodyne' (*Wireless World*, 17 January 1936, p 63), a term that was even more impressive but made little sense since the different (hetero) frequencies that are combined are not in the auditory (sonic) range. A reader of *Wireless World* lamented its verbal allure: 'My deep regret is that the public permitted themselves to be swept off their feet with the term "superhet"' (28 May 1937, p 525).

Dawn in Andromeda is packed with questions of naming. The first invention of the colonists is, in fact, the name – names being amongst the chaff that God has stripped away from them in their transition from Earth. The names that they choose are portmanteau terms (like 'superhet', 'fanmag' or 'scientifiction'), drawn from the spines of *Encyclopaedia Britannica*, which the scientist remembers from his days on Earth. He bestows their names from these memories (Sars Sorc, Mary Mus, and so on), an uncomfortable indication that he will not be able to shake free of earthly knowledge; for all its failings, he remains in thrall to book learning.

Indeed, the scientist's own name speaks of this tendency:

The young scientist, who had thought of these names, smiled upon his work and found it good. He chose 'Sord Text' for himself, as he saw that he was going to be the first honorary scribe and registrar of the new community, and as the other names in his selection were claimed one by one, by those they suited best, he ticked them off on his stone (Large, 1956, pp 16-17).

Sord Text's name balances the violence of science – s(w)ord – with the necessity of textual inscription to make it 'real'. Having power over words is essential to him, as we see from his unnecessary marking of names upon the stone (as though one person would not notice if another were given the same name). Sord Text later argues with his partner Annu Balt over how (that is, by whom) her botanical collection should be named (pp 138-9). Ironically, he is being for once insufficiently scientific about the matter. Her insistence on the precise labelling of variants and hybrids is the key to success in her genetic experiments; his casual, anecdotal naming threatens to ruin it all.

The number of valves in Large's set – seven – is also significant. It is a magical number, of course; and in general, a higher number sounded more impressive (much like the number of cylinders in a car engine). In technical terms, the function of multiple valves was unclear to the casual consumer. Perhaps seven almost sounded *too* good for some consumers to aspire to; McCarthy continued to focus on marketing its slightly cheaper 'Super 6' in the months after the 7-valve model was made. Valves wore out after a few years, and some consumers were cautious of the replacement cost entailed by having a large number. Like the introduction of the superhet, increasing the number of valves increased the obsolescence of sets, and only the enthusiast was able to replace them.

The technical obscurantism implied by the seven valves – and other aspects of the set – comes in for criticism in *Dawn in Andromeda*. The first mention of the colonists' goal, the wireless, is amidst mystification and drunkenness. It comes after members of the party have been dancing round the fire in the cave, casting their shadows upon the walls. Afterwards, they are exhausted and Jere Libe offers to entertain them by drawing something for them on the wall. For the subject of Andromeda's first, primitive cave art she chooses not a beast or a human or even a spear, but – bathetically – a wireless set (p 77). The setting of the scene, with its invocation of Plato's ignorant cave-dwellers, makes the action ominous. The image of the wireless, it implies, is far from the reality. A sort of shrine or 'altar' is then set up in the cave, beside the stove and under the image of the wireless 'that no one had dared rub out' (p 83). Here, Sord and Plan leave their 'ostrakon, covered with fine scratched lines and strange symbols' (p 83). The science follows after the image; their inscription of a circuit diagram, too, has elements of magic and mystery.

Sord Text's constant temptation to put science in writing – that is, to remove it from the realm of practical know-how – is frequently mocked by Jere. Jere is at once the most iconoclastic and yet spiritually-inclined member of the group. She is often one step ahead of the men in their 'discoveries', through undisclosed methods. Jere, more than anyone else, sees how science shades into religion, even though Sord and the others claim to despise it. She teaches the children her particular version of animism, stating that 'she was liberating [them from the dogmas and doctrines of an earthy religion called "Science"]' (p 158). On other occasions, her religious ceremonies turn out to have good purpose, such as her rituals for sexual relationships which actually prevent accidental in-breeding in later generations. And indeed, a turn towards religion is necessary before the all-wave, seven-valve superhet can be constructed. This turn occurs in the mind of Neon, a prodigious member of the second generation. It is his mystical leanings which inspire his research, enabling the eventual construction of the set:

For Neon a new link between the world of thought and the world of the senses was established [by the wireless]. He knew now that he lived in a conceptual universe whose basic stuff was thought (p 212).

His non-material world, inspired by radio, is reminiscent of the ontologies dreamed by Oliver Lodge, and later science fiction. Neon's enthusiasm for the principles of radio allows him to be persuaded to go on the ill-fated voyage of the *Expedient*, the colonists' equivalent of the early modern voyages of discovery, and the occasion for the emergence of treachery amongst their hitherto utopian organisation. He is bribed by being told that he can be the wireless operator. 'It was unfortunate', as Large dryly puts it, that the expedition's wireless was only a receiver. The party's fatal communicational isolation from base camp is the source of disaster. All they can do is receive bland news from home, of babies born and potatoes harvested. For some wireless enthusiasts of the 1930s, this was the curse of the superhet. Its complexity in comparison to the 'straight set' had put off home constructors and experimenters (25 June 1937 p 615). Even as it improved reception, the superhet made its users more passive users of the wireless.

Eventually, the receiving set of the *Expedient* is smashed. Back at base, Jere guesses why: the frustration that it must have caused:

I know what it is to live with a wireless set that will receive but not transmit. I have come from a world that was full of one-way sets. It was always 'their' news, 'their' parlour games, 'their' smug chatter, 'their' ethics and 'their' morality. Always 'their' idea of what was good for me. They flaunted their science and their marvellous technology, but they couldn't fit our sets with so much as a button that we could press when we liked a programme, or refrain from pressing when we didn't (p 223).

A deeper frustration concerning wireless, and epitomised by the all-wave superhet, then, had to do with the socio-technical system that contained it. The multiplicity of stations available to owners of a 1930s all-wave set sat uncomfortably with the paucity of stations available from the BBC. Salt was rubbed in the wound by the continued obligation to pay the corporation's licence fee. *Wireless World* carried frequent complaints in this regard from its columnists (notably 'Free Grid') and its readers (see e.g. 26 February 1937 p 196). A good number of historians have recounted the BBCs' complicated relationship with its listeners' opinions (Briggs, 1965; Crisell, 2005; Anthony, 2012). Most pithily, Robert Silvery, former employee of the department of Audience Research described its name as '... an elaborate façade to foster the delusion that the BBC took cognisance of its public.' (Silvery, 2016, p 1). Users were passive not only as (non-) constructors, but also as listeners.

Dawn in Andromeda makes several jibes about the BBC. A tediously prating character 'sounds like the third programme' (p 66). Jere mimics the broadcaster, 'bitterly exact':

She was Dr Pangloss and Queen Victoria and Mrs Grundy all in one. She was one of 'them' administering cultural cod-liver-oil-and-malt for the good of 'their' world (p 165).

As far back as 1924, Archibald Low had perceived the trend towards the voice of 'them', not 'us' on the wireless, placing the onus upon administrators of the technical system to make sure that it could respond to any and all frequencies of speech:

It has been said that, at present, those in authority find it necessary to choose special voices for the wireless broadcast-delivering. What an idea! The public want to hear everybody. ... They do not want a perfect voice, they want a perfect personality, and it is rather the wireless that must be altered to take any reception than the human voice whose very characteristics delight us (pp 38-9).

Large, like many of his readers in fandom, was particularly critical of the patriotic slant of the BBC in the lead up to the Second World War (c.f. Nicholas, 1996; Dinsman, 2015). In an article for the *New English Weekly* he mused on the results of an experiment in which he replaced all the patriotic words he heard (such as 'Mother Country' or 'British Commonwealth of Nations') with 'blab'. But he found that simply getting rid of his set was more effective:

I have applied my technique ['blab'] with outstanding success to BBC talk and 'news'. By selling my wireless set I have not only raised the level of intellectual honesty and purity of speech in my home, but I have got a few pounds in cash, and shall save ten shillings a year on the licence (Large, 1938b, p 60).

However, this seems to be an example of where the writerly self diverges from the bodily variety; a manuscript of 1939 indicates that he still possessed a wireless (p 70).

By the time *Dawn in Andromeda* was published and read, the Cold War was underway. Literature of this era of course featured apocalypse, alien invasion, espionage, ideology and betrayal (see Hammond, 2013), and as Haynes has memorably sketched (pp 167-294) was also a period in which professional, 'big' science came under suspicion. Beyond this, or perhaps as a part of it, some writing examined public credulity as a fault analogous, or complementary, to the destructive hubris of science. Bred in wartime (or the classroom), unthinking discipline was liable to break down disastrously in conditions of freedom, liberating dangerous impulses that had previously been kept in check. *Lord of the Flies* (1954) is a foundational text of this type, and in its basic plotting – a hopeful new community gone wrong – it has a great deal in common with *Dawn in Andromeda*. Golding's novel was adapted for radio by a talented dramatist named Giles Cooper, who amongst his many plays for the BBC also wrote *Mathry Beacon* (Cooper, 1966, pp 14-82). This play, often regarded as Cooper's greatest, was first broadcast in 1956 and like Large's novel of that year also features an isolated community in hopeless thrall to a communications-technological idol. The 'Watling Deflector', to which Cooper's WW2 characters have been assigned as guards, is some sort of radar-related device. Its nonsensical nature is never scrutinised by them, thanks to the culture of unquestioning military obedience. Indeed the Deflector metaphorises a propagandistic wartime discipline – military and domestic – that obviates the inconvenience of thinking for oneself. 'If this old Deflector didn't go on making that noise I don't know where we'd be' (63). Under the constant hum of the device, the guards develop a sort of sexual commune that would be 'a Sunday Paper Nasty' in the quiet scrutiny of civilisation, and fall back into farming ways that are presumably far from their usual urban existence. The revelation that the war is, in fact, long over, and that they have been posted in vain, does not bring about a happy ending – for when the Deflector stops they no longer know what to do.

Large's patriotic 'blab' was intermingled with 'blab' of the religious kind, 'Nearer My God to Thee' mixed in amongst the wartime admonitions (p 70). A parson is included amongst the people transported to Andromeda, but is ill-fitted to its exigencies and dies almost immediately (and

comically). Before he goes, however, he reveals himself – black crime – as the kind of person likely to be on the wireless. ‘He spoke as though keeping his eye on the clock in a broadcasting studio’ (p 20), that is, timing his rhetoric and emotion to exploit the constraints of the broadcast medium.

Science was not exempt from the lure of priesthood. Sord, when he ‘smiled upon his work [of naming] and found it good’, reveals his pretensions to be God-like (Genesis 1:31). The connection of naming and God’s power over creation (devolved to Adam) is a well-established theme in European science and literature (Bennett and Mandelbrote, 1998), but needless to say, for Large this is not a happy state of affairs (see Large, 1938c, pp 52-54). And yet Large, as narrator, withdrew in this novel from the playful interleaving of author, narrator and protagonist that marked his first two novels and the writings of the fans. He has become, in effect, the God figure who sets the characters up on their quest. Large could not beat the BBC, so he retreated to a narrative form where he could join them.

Conclusion

In all the ways discussed – the cheap power of naming, technical obscurantism, the discouragement of the amateur, and the obligatory, one-way communication from ‘them’ – the all-wave superhet came to disappoint. Many if not all of these seeds were sown in the late 1930s and are visible in the pages of *Wireless World*; they come to fruition in Large’s 1956 novel.

Dawn in Andromeda follows something like a William Golding plot; original flaws in the community crack open into full-blown treachery and warfare. The first killing, in the novel’s final chapter, gives both sides pause for thought. And it is at this fraught moment that the wireless set is brought out. It is trumpeted as ‘the instrument of our deliverance’, but the grandiosity of this claim is belied – and pleasingly so – by the geekish, otherworldliness of its constructors as they emerge blinking into the daylight, still wanting to tinker with it *just a little bit more*.

But what is their wireless going to receive, isolated as the colonists are in distant space? Here Large takes both a cheap technological gimmick and a non-earth psychogeography from science fiction. The set has been fitted with a fictional feature, a ‘two-way interpenetration’ that means it can pick up the sounds of the universe without the need for broadcasting equipment. As the colonists range through the dial they hear the sounds of comets and meteorites, oceans and birdsong, until at last:

... voices succeeded the sweet music, and the voices were their own. Not one voice speaking to many, but *all* to be heard ... (p 282)

And from these, the voice of God is heard, repeating his faith (expressed at the book’s very opening) that there is good in humanity after all. A rainbow appears, resting on piers that are ‘the faith of science’ (p 282). The ending of the novel, then, holds open the tension between wireless at its two frequencies: the promise of science for all, on the one hand, and on the other the constant danger of its being made obscure and commodified. One is reminded of early enthusiasm for the Internet, lauded, as the wireless once was, as being at once the prime means of mediating science, and the zenith of science’s instantiation. The public history of wireless, re-tuned through fiction, may just help us think about participation in the current era.

List of figures

Figure 1: *Everyday Science and Mechanics* was an example of a wireless-orientated magazine published by science fiction entrepreneur Hugo Gernsback, exemplifying a crossover in the two markets. The cover invention for this issue, 'the Hypnotone', accidentally (?) invokes Large's novel *Asleep in the Afternoon*. © Universal History Archive/UiG / Science & Society Picture Library. Image No. 10603473.

Figure 2: Western Electric 7-valve 'superhet' heterodyne radio receiver, 1924. This example of a superhet comes from the earlier, less successful generation than that which was incorporated into sets of the 1930s. © Science Museum / Science & Society Picture Library. Source No.: 1937-0193.

Figure 3: Advertisement from *Wireless World*, 18 June 1937, p 589.

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Endnotes

¹ It is not, perhaps, insignificant that 1936 was also the year when the BBC Listener Research department was inaugurated (Silvery, 2016, p 1).

² It is impossible to tell whether Jacques (or his parents) had personal experience of the coal industry, or whether his series was the result of book-learning or lecture attendance. Mines did exist in the Leicester area, the house in which he lived – almost certainly his parents' – was rather too large to belong to a mine worker's family.

³ Recent work (Trotter, 2013) has begun to disassemble the historical wall between high modernism (Woolf, relativity) and the apparently plebeian modernism of scientific realists (Wells, radar). Large is an excellent case in point.

⁴ Large's one scientific book, *The Advance of the Fungi* (1940) was itself arranged as a historical narrative, comprised of human efforts.

⁵ In his 1933 essay 'Escape', Large too recalls the 'trend of ingenuity and delight' that at first inspired him to be an engineer (Large, 1933, p 19).