

Edward Allen (ed.) Forms of Late Modernist Lyric [Book review]

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‘Lamp-posts and high-volted fruits’: Scientific Discourse in the Work of Dylan Thomas

John Goodby

It is unusual, to put it mildly, to consider Dylan Thomas’s poetry in terms of its relationship to science. The complaint made as long ago as 1947 by Leslie Fiedler, that ‘nothing more modern than a ship’ appears in it, still strikes a chord, with Thomas regarded by most as a poet purely of organic and cosmic fundamentals.¹ Supporters, as well as detractors, agree: Thomas’s biographer Paul Ferris opined that ‘He was an answer to the machine; his poems contain few images from the twentieth century.’² Thomas’s poetry, to this way of thinking, is defined by its *opposition* to the modern, at the heart of which is the scientific world-view. It may be permissible for his work to have ignored politics, such arguments usually proceed, but to have erased from it interwar society, shaped as that was by sweeping technological change, was surely a major error of omission. Thomas, so this case goes, was a neo-Romantic who ignored his own times, and the fact that modernity signified the reign of science and its various outcomes. Hence, it is concluded, the narrowness of his work, for all its undoubted maieutic and rhetorical power.

Of course, as Ezra Pound once proposed, literature is “‘news that STAYS news’”, and such a critique often amounts to little more than a desire for the comfort of the standard overly-sociological accounts of 1930s writing, a yearning for period references to Bakelite and chrome steel, the Comintern and Hitler.³ It may, in some cases, also signify resistance to the Joycean revolution of the word to which Thomas so thoroughly subscribed. But, even if we discount these prejudices, it is, in any case, astonishingly easy to disprove the charge of technophobia. How was it possible for

Fiedler and Ferris to miss, among many other items ‘more modern than a ship’, the likes of ‘radium’, ‘carbolic’, a ball-cock ‘cistern’, ‘celluloid’, ‘arclamps’, ‘macadam’, an aircraft ‘hangar’, car ‘gears’, ‘allotments’, coal-tips and oil-wells?⁴ And, as Thomas rightly – if slightly dodging the issue – pointed out to Henry Treece, when he suggested that his poetry lacked ‘social awareness’, ‘a good number of my images come from the cinema & the gramophone and the newspaper, while I use contemporary slang, cliché, and pun’.⁵ In his correspondence Thomas is often alert, albeit unseriously, to technological and scientific developments; he is not un-Audenesque through lack of interest, as a November 1933 reference to the most famous ‘helmeted airman’ of the day, the American Wiley Post, shows.⁶ Even the later poetry, distinctly pastoral as it is, registers the shadow of atomic weapons. And, far from being averse to technology in *propria persona*, Thomas embraced every new mass media form to appear in his lifetime: as writer and performer for radio, as film script writer, as near founding-father of the spoken voice LP record industry in the USA, and as television presenter (the two programmes he made for the BBC have, alas, been lost). With good reason Marshall McLuhan noted how Thomas’s cyborg energies traversed the ‘thinning line between bucolics and cybernetics’, and made him the exemplary electronic bard of his ‘global village’ in *The Medium is the Message* (1967).⁷ We know, moreover, that Thomas was an avid reader of popular science and sci-fi (he and Ray Bradbury were mutual admirers of each other’s work, for example); Ivan Phillips glimpses a ‘premonition of *The Terminator*’ in ‘My hero bares his nerves’, in which the body’s inner ‘wires’ and ‘box of nerves’ are ‘turned inside-out, [a lyrical representation] of visceral surfaces and superficial depths.’⁸ His poems and stories appeared in generalist periodicals such as the *Athenaeum* and *The Fortnightly Review* which mixed literature and science articles, and he grew up in a home that

Commented [EA1]: It should be ‘Message’, shouldn’t it? *The Medium is the Message* is the title he wanted, but it got mangled, and he stuck with *Message*.

took two daily newspapers (*The Times* and *Telegraph*) at a time when stories such as Clyde Tombaugh's discovery of Pluto, or William Beebe's bathyscaphe descents into the depths of the Pacific Ocean, made the front page.⁹

Yet a 'subway' here or an 'antiseptic' there is the least of it. At the deepest levels – of subject, vision, and style – there is compelling evidence that the 'process poetic' which Thomas forged in the twelve months from April 1933, and which informed all his work thereafter, was conceived of, and couched in, contemporary scientific terms; that is, in accordance with Darwinism and the new physics of the early twentieth century.¹⁰ Change is its key thematic concern, apparent in a monistic focus on flux, the inextricability of creation and destruction, and the ultimate interconnectedness and simultaneity of all events and objects. Romantic pantheism and mutability are upgraded and supercharged in the light of cell biology and the creation of the universe; hence the fixation on drastic metamorphosis, whether in the human life cycle – conception, birth, adolescence, death – or its planetary and cosmic equivalents. But Thomas's poetry enacts this knowledge at the level of style, too, its incessant wordplay and intercutting images mimicking the incessant flux of the Einsteinian universe, just as the emphatic materiality of its language and its rhythms incarnate the processual, somatic rhythms of our bodies, of breath, heartbeat, feeding, sex. Physics and biology, respectively, offer the debate between relativism and determinism played out in the early poetry, although this is complicated by cultural repressions and neuroses, figured in the struggle between linguistic energy and the strictest of constraining metrical schemes. It is a far cry from the work of the 'Pylon Poets', who presented the sociological surfaces of their world overtly, often with great brilliance, but whose language subserves a discursive purpose, and whose pre-

modernist forms simply act as containers for content rather than figuring a dialectical struggle with it.

And yet there are, of course, good reasons why readers might feel, even so, that Thomas's work is un- or even anti-modern. He almost squeezes the social world from his poems, and his lyric compression, wordplay and use of mythic method often make it difficult to detect science, technology, or any mundane source. The preacher's *hywl* of 'And death shall have no dominion', for example, will distract many from the poem's originating *mise-en-scène* of a naked body exposed in No-Man's Land. The deceptiveness is calculated, and the reader needs to be alert to it, and to the way it may affect every part and level of a poem; the modernity of 'arclamps' in 'Our eunuch dreams' is clear enough, but its reworking as 'ark-light' in 'Altarwise by owl-light' a year later reflects the way social and technological discourses are relentlessly, if playfully, subsumed and absorbed by those of religion and myth.

Cybernetic Collocations

Thomas, his friend Daniel Jones once claimed, was uninterested in any studies 'with names ending in -ology, -onomy, -ography, -osophy, -ic, -ics, or even, to a large extent, just -y (history, botany)'.¹¹ Jones, however, was writing out of exasperation at the over-ingenuous explicators who swarmed over the poetry after Thomas's untimely death in 1953, casting him as an expert in anything from Gnosticism to marine zoology. In reality, the threat (and less frequently the promise) of science and technology is a central subject of the early poems. 'Fuse', from the first line of the most famous of them, can be thought of as a key term in this regard. Chiefly a noun,

but with verb-potential too ('the process of fusion'), it can be said to enact the proposition of Einstein's most famous equation – $E = mc^2$ – that energy and matter are intimately related. Moreover, it also pointedly yokes an organic and an inorganic sense, both plant stem and bomb timer, or circuit breaker, metapoetically describing the act of creating the many similar cybernetic collocations scattered throughout Thomas's first two collections, and which incorporate science and technology within the organic-cosmic round: 'oil of tears', 'milky acid', 'seaweeds' iron', 'motor muscle', 'girdered nerve', 'tufted axle', 'scythe of hairs', 'petrol face', 'man's mineral'.¹² Thomas himself presents such fusions as his *raison d'être* as a poet, indeed, in the summatory 'I, in my intricate image' (1935), a long lyric dialectically organised in three sections (as are several other early poems), in which he traces the adventures of a multi-layered cyborg 'ghost in metal' and exemplifies his 'habitual confusion of metal and flesh'.¹³

In relying so heavily on this trope, Thomas was of course reflecting a longstanding fear of human subordination to the machine. It had already appeared in the early notebook poem 'The ploughman's gone', of 28 March 1933, for example, in the form of a conventional lament for dwindling human contact with the natural world, symbolised by the replacement of the horse with motorised vehicles. Human beings, it concludes, are unwittingly making themselves functions of the machine: '[m]an who once drove is driven in sun and rain'.¹⁴ By autumn that year, however, having perhaps absorbed the import of Hitler's seizure of power in January 1933 and what it implied for peace in Europe, Thomas had infused the idea of technological supersession with a generational dread of joining the 'riddled lads' who 'Cry Eloi to the guns' in a new world war.¹⁵ Such birth of, and as, mechanised slaughter, is the subject of 'I dreamed my genesis', for example, in which the poet dreams 'my genesis

and died again, shrapnel / Rammed in the marching heart, hole / In the stitched wound [...] muzzled / Death on the mouth that ate the gas.’¹⁶ Such trench war technology suffuses *18 Poems* (1934) and *Twenty-Five Poems* (1936): thus, a conceit on barbed wire images Christ’s foreknowledge of his agony in ‘Before I knocked’, as ‘flesh was snipped to cross the lines / Of gallow crosses on the liver / And brambles in the wringing brains.’¹⁷ By late 1933 this had become a genuinely ambivalent quasi-futuristic vision, in part because Thomas’s burgeoning socialism required a positive conception of ‘the huge, electric promise of a future’ in which science would be harnessed to human need.¹⁸ In the unpublished ‘We see rise the secret wind’, for example, the modern city is that of Fritz Lang’s film *Metropolis* (1927), a favourite of Thomas’s, in which technology enslaves but could be ‘saviour’ to the ‘wretched’:

A city godhead, turbine moved, steel sculptured,
Glitters in the electric streets;
A city saviour, in the orchard
Of lamp-posts and high-volted fruits,
Speaks a steel gospel to the wretched
Wheel-winders and fixers of bolts.¹⁹

The poem which deploys cybernetic collocations most extensively is ‘All all and all’, written around ten months later, in early summer 1934. It balances the threat of the driver being ‘driven’ by the machine – being lost in the totality, or ‘all’, of cybernetic fusions – against the need to ‘[f]ear not the working world’ of machinery and absorption in its ‘synthetic blood’, ‘ribbing metal’, and ‘bridal blade’. Overcoming trepidation, the speaker comes to realise that his entry into the adult world of writerly

and sexual empowerment entails acceptance of modernity's fusion of human and machine, and an embrace of the ambiguously 'mechanical flesh':

Know, O my bone, the jointed lever,
Fear not the screws that turn the voice,
And the face to the driven lover.²⁰

The governing collocation of organic and inorganic in Thomas's work is that of the microcosm, the mapping of body and universe onto each other – although in his case the body *is* the universe, the universe the body. Writing to Trevor Hughes in January 1934, Thomas claimed that 'it is impossible for me to raise myself to the altitude of the stars, and [...] I am forced, therefore, to bring the stars to my own level and incorporate them in my own physical universe', and the movement is reciprocal: in the same letter he speaks of wanting to prove that 'the flesh that covers me is the flesh that covers the sun'.²¹ The night sky in 'Light breaks where no sun shines' is a place '[w]here no seed stirs' but '[t]he fruit of man unwrinkles in the stars / Bright as a fig', semen constellating the seeded dark of the vaginal heavens.²² This kind of conceit is a staple of ancient, medieval, and Renaissance writing, of course, but here it is revisited in the light of the new physics of Planck, Rutherford, and Einstein, as mediated through the works of popular science we know Thomas to have read, such as Alfred North Whitehead's *Science and the Modern World* (1926).²³

Einsteinian Bodies: ‘lost in a big and magic universe’²⁴

Ultimately, Thomas’s poetic of process bespeaks an understanding that, for all its apparent solidity and stability, the physical universe is in a state of perpetual flux. Everything not only develops into its opposite but contains it, *is* it: ‘The quick and dead / Move like two ghosts before the eye’.²⁵ The first proto-‘process’ poem, ‘And death shall have no dominion’, of April 1933, reveals the cosmological source of ‘process’ in its concluding lines:

Heads of the characters hammer through daisies;
Break in the sun till the sun breaks down,
And death shall have no dominion.²⁶

Here, the sun ‘breaking down’ is both an impossibility, a synonym for eternity (thus endorsing the Christian promise of resurrection), and something that will happen, according to modern cosmology, in five billion years’ time. In this latter reading, we are promised only the cold comfort that, after death, we are ‘resurrected’ insofar as our molecules will ‘push up the daisies’ (the proverbial phrase which supplies the germ of the passage), rejoining the vegetation cycle until the Earth is swallowed by the sun’s supernova. In the same vein, Thomas referred to ‘our howls at [...] the destiny of the sun’, and gave to his novel-in-progress the working title of *A Doom on the Sun*.²⁷ The actual physics of the life-cycles and deaths of stars had been calculated not long before by the astronomer Arthur Eddington, and publicised in bestsellers such as his *Stars and Atoms* (1926).²⁸ Crucially, ‘And death’ allows itself to be read as simultaneously upholding Christian belief and scientific prediction, and this

discovery of a rhetoric by which language could assert two mutually contradictory propositions in the same phrase would be a staple of all Thomas's subsequent poetry. While it is a critical commonplace to mention Thomas's taste for paradox, its source in cosmology has hardly even been remarked.

Within the apocalyptic scope of the poetry, then, birth and death (equally of humans, of stars, and of the universe), often with a mythic or Christian dimension, are common. They reflect the Anglo-Welsh outsider's fear of silencing, and his attempts to engineer his origin. Thomas's instinct is to do so within a cosmic frame; the origin-poem 'In the beginning was the three-pointed star' melds Big Bang Theory *avant la lettre* with Genesis by way of John's Gospel, while 'A Refusal to Mourn', with its 'all humbling darkness / Tell[ing] with silence the last light breaking', evokes the entropic heat-death of the universe at the close of its existence.²⁹ Speculations on the fate of the universe were commonplace at the time; the 1920s was the decade of Edwin Hubble's discovery that the universe was expanding, and of the steady-state theory advanced to explain it in 1928 by the other great populariser of science, with Whitehead and Eddington, James Jeans.³⁰ Crucially for any reimagining of the concept of microcosm in contemporary scientific terms, it was also confirmed in the mid-1920s that human beings are made of 'star-stuff', the debris of heavy elements produced by exploding stars. As Eddington later put it, famously, in an interview of 1932, 'we are all bits of stellar matter that got cold by accident, bits of a star gone wrong'.³¹ 'I dreamed my genesis' alludes directly to this, the flesh of its speaker said to have 'filed / Through all the irons in the grass, metal / Of suns in the man-melting light'.³² 'All flesh is grass', as *The Book of Common Prayer* has it but, also, our bodies are composed of elements forged in the stellar furnaces, and will return to them.³³

Thomas was characteristically flippant about such matters. Writing to Johnson on 15 April 1934, he grumbled about the way ‘the atomed tides of light break and make no sound, how the God of our image, gloved, hatted, & white, sits no longer playing with his stars but curving his Infinite length to the limit of a Jew’s theory.’³⁴ The allusion is to the *General Theory of Relativity* (1915), in which Einstein refined the concept of space-time he had propounded in 1905 by claiming that the space-time continuum is warped by mass and energy, to produce a dynamically curved space-time; the universe is saddle-shaped and folds back on itself, as light itself eventually does. But the poet’s flippancy is a pose; Einsteinian physics underwrote Thomas’s poetics at every level, as we might expect of the perpetrator of the enjambement at line two of ‘To-day, this insect’, a poem which explores the relationship between the two elements it hinges:

To-day, this insect, and the world I breathe,
Now that my symbols have out-elbowed space,
Time at the city spectacles ...³⁵

In similar vein, another letter to Johnson of 25 December 1933 had noted: ‘When I learn that the stars I see *there* may be but the backs of stars I see *there*, I am filled with the terror which is the beginning of love. They tell me space is endless and space curves. And I understand. [...] I’ve saddled a bright horse, and his brightness, not his body, keeps me bouncing up and down like a rubber star on his back’.³⁶ In ‘The Holy Six’, part of the projected *A Doom on the Sun*, Mr Edger recalls the timorous old parson Mr Davies protesting belief in the face of the new physics (‘howling, from a religious hill of the infinite curve of matter’), while later in the same story Mr Rafe

(an anagram of ‘fear’) asks himself, ‘[w]ere the faces of the west stars the backs of the east?’³⁷ There can be no doubt that Thomas’s ‘saddling’ of the ‘bright’ Pegasus of his poetry derived from the dissemination of Einstein’s ideas by Jeans and Eddington, just as the ‘process’ to which he alludes in ‘A process in the weather of the heart’ echoes the ‘philosophy of process’ propounded by Whitehead in *The Concept of Nature* (1920); the similarities between Whitehead’s and Thomas’s ideas are just too many, and too close, to be coincidental. And, as already noted, such similarities are not only a question of subject matter or governing analogies, but of style. The poems’ piled-up appositive clauses, for example, mimic the simultaneity of past, future and present events in the Einsteinian universe, how our experience of them as temporal flow is an illusion, enacted by the flimsy grammar of the sentence in which the clauses are suspended (there are thirty-four in the single opening sentence of ‘When, like a running grave’). Equally, Thomas described his ‘generative method’ of composition in terms of nuclear physics or cell biology, each poem growing from a decentred ‘host’ of conflicting, breeding images and words, driven by word-fission and -fusion. He may have known of the quantum discovery that energy behaves simultaneously as wave or particle – that nothing is solid, least of all solid matter – as a punning aside in a letter to Johnson of October 1934 suggests: ‘Not that it matters, anyway. Life is only waves, wireless waves, & electric vibrations. Does it matter, my little radio programme from Battersea, that the high or low tension runs down?’³⁸

Commented [EA2]: and (?) – to make sense of ‘simultaneously’?

Darwinian Bodies I: Heredity, Genetics, Sex

If sub-atomic and cosmic bodies demarcate the frame Thomas's poetry inhabits, as it were, the implications of science are most vividly detailed at the intermediate level of the human body. In this sense, his work's insistent corporeality is only in part a reaction against the cerebralism of the Audenesque poets. Incarnating the new physics in verbal form required that, as he put it, 'the description of any thought or action – however abstruse it may be' should be 'beaten home by bringing it onto a physical level. Every idea, intuitive or intellectual, can be imaged or translated in terms of the body, its flesh, skin, blood, sinews, veins, glands, organs, cells or senses.'³⁹ Poetry itself is defined by the body: while Thomas could dismiss his work as 'anatomic slapstick', he also opined that 'My latest definition of poetry is "The expression of the unchanging spirit in the changing flesh."' ⁴⁰ As I argue elsewhere, the emergence of biomorphic, body-centred styles in some 1930s art reflected a fear of intensified regimes of State control and of the looming World War, and the threat these posed to our one inalienable and irreducible possession, our bodies.⁴¹ Thomas's response was informed by a knowledge of Darwinian biology, and contemporary debates around genetics and heredity made themselves felt in many of the poems and short stories of the mid-1930s. 'Life', he asserts in good Darwinian fashion in 'In the beginning', 'rose and spouted from the rolling sea', and the sea is the origin of life which he asks to be de-evolved into if he cannot overcome writer's block in 'On no work of words': 'Ancient woods of my blood, dash down to the nut of the seas / If I take to burn or return this world which is each man's work.'⁴² 'Nut', because seawater is the source of the blood of all animals according to evolutionary theory, or, as Thomas explained to Desmond Hawkins: 'The sense of the last two lines is: Well, to hell and to death with me, may my old blood go back to the bloody sea it came from if I accept this world only to bugger it up or return it. The oaktree [sic] came out of the acorn; the

Commented [EA3]: Since seawater is the source of the blood of all animals according to evolutionary theory, Thomas plumps for 'nut', or, as he explained to Desmond Hawkins:

woods of my blood came out of the nut of the sea, the tide-concealing, blood-red kernel.⁴³

Evolution is driven by survival and ruthless sexual selection, and in the poems of 1933-35 the carnal body is equally a charnel one. The poems' two basic sexual scenarios are sex as a form of deprivation – enforced virginity, masturbation, morbid sexual fantasy generated by religious repression – and sex haunted by the fear of entrapment through pregnancy and supersession by one's offspring. A letter of 9 May 1934 to Johnson informed her that '[t]he chromosomes, the colour bodies that build toward the cells of these walking bodies, have a god in them that doesn't care a damn for the howls of our brains. He's a wise organic god, moving in a seasonable cycle in the flesh, always setting and putting right what our howls at the astrologers' stars and the destiny of the sun leads us on to.'⁴⁴ We are compelled into sex, even as we know it leads to new life, and that, from the first mitosis, the embryo is busy elbowing its parents into the grave. To have children is to release a 'plague', to make oneself disposable, to admit time and hasten decay and death, and Eros and Thanatos are inextricably entwined in such a vision. Yet if its priorities appear male-centred, the poems themselves never quite lapse into mere misogyny. Not only is the threat of conception viewed as a shared catastrophe, but in acknowledging the greater incursion on female freedom, Thomas begins to show signs of what will eventually become a feminised poetic, in which female nurture, endurance and fecundity are the chief virtues.

The gravely elegiac, post-coital lyric 'A grief ago', of late 1934, is a good example. It traces what it means in biological and psychosexual terms when the 'country-handed grave' 'boxe[s]' us 'into love', uniting the two 'countries', or ancestral groups, of a couple in the sexual act. The lovers are forced ('boxed' as

punched) into congress by the grave (to 'box' is also to put into a coffin), which, by a bitter paradox, can only be overcome by producing the offspring who will supplant them.⁴⁵ As Ralph Maud puts it, 'lovers [...] make of themselves the conduit whereby ancestors become progeny', and the poem is 'about DNA [...] The past is being dragged into the present by the sexual act and conception, whereby hereditary characteristics ['ropes of heritage'] are acquired by the zygote'. The lines, 'The people's sea drives on her, / Drives out the father from the caesared camp [of the womb]', Maud reads thus: '[t]he girl is [...] a representative of her ancestors and the male seems only the means whereby her history is transmitted to the future. The impregnated woman is defined only by her "people" at that moment. And the man is nowhere.'⁴⁶ But though this is true enough, 'caesared' points to the political dimension of the poem's fear at having progeny – the Europe of the dictators – while Maud's claim of male resentment at exclusion seems excessive:

Let her inhale her dead, through seed and solid
Draw in their seas,
So cross her hand with their grave gipsy eyes,
And close her fist.⁴⁷

In these closing lines, it seems to me, the shrugging acceptance of 'let' outweighs the sense of monitory exhortation it might contain; 'she' will inevitably reincarnate ('inhale', make alive) and possess the joint genetic inheritance, and the speaker will without bitterness 'cross her hand' with the ancestral 'eyes', or 'I's (these imagined as coins paid, through the transposed epithet, to a gipsy fortune-teller; the lurking cliché is 'cross my palm with silver'). The woman is one with the biological juggernaut as

the man cannot be after the act is completed, and this is an ungainsayable reality. It is presented as tragedy and in an unadorned way. Yet the poem's grudging tenderness towards the 'she' anticipates the way in which, from the mid-1930s, an acceptance of female primacy would resist and supplant any hints of the sexist model of male-female relationships usually derived from Darwinism. 'A saint about to fall', of September 1938, begins with a father's ejaculation, but modulates at its mid-point into the voice of the mother bearing their child, suffering her labour pangs ('the horrid / Woe drip[s] from the dishrag hands and the pressed sponge of the forehead') in a form of poetic *couvade*; while "'If my head hurt a hair's foot'", written four months later, after the birth of the Thomases' first child, cuts out the father completely to offer an extraordinarily empathetic colloquy between the embryo and its mother.⁴⁸

Darwinian Bodies II: 'You need glands ...'

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Critics have dismissed the bodily insistences of Thomas's work in various ways; 'visceral' is the favourite epithet, with 'glandular' a close second. Both, however, are perfectly appropriate if taken to signify a natural interest in what contemporary science had to say about the organs which drive and control bodies, the glands.⁴⁹ 18 *Poems*, in particular, might be described as a primer for a new poetic genre, the Darwinian love lyric, when viewed in the light of interwar research into glands and the hormones they produce. Although such research had begun nearly a century earlier, it became serious science only in the 1900s; the first hormone to be identified and named was secretin, in 1902, and the word 'hormone' (from the Greek *hormo*, 'I

arouse to activity') was first used in 1905 by the English physiologist Ernest Starling (1866-1927).⁵⁰ The two decades following the First World War were the golden age of gland and hormone discovery; they witnessed the extraction of insulin and its first use to treat diabetes in human beings (1926), the isolation of the first sex hormone, estrone (1929), followed by theelin, estradiol and estriol; the discovery of the male and female hormones androsterone (1931) and progesterone (1934); and identification of testosterone (1935). Parallel work on the glands themselves led to the discovery that the pituitary gland regulated the entire endocrine glandular system.

Thomas's first gland turned up in a notebook poem of 23 April 1933, in which a man was ironically advised to 'regain [his] fire. / Graft a monkey gland, old man, at fools' advice', an allusion to the surgical procedures which built on gland research to alter and revitalise hormonal function.⁵¹ This was the age of hormonal and gland implants, pioneered by the Russian Serge Voronoff and popularised in America by 'Goat Gland' Brinkley, a Kansas quack; a related popular procedure was the 'Steinach operation', submitted to by W. B. Yeats in 1931.⁵² As with the new physics, these discoveries and procedures were staples of the press, which was as exercised by their sexual implications as much as today's media is by Viagra, HRT, surrogate motherhood, and the like. In the years around 1930, Chandak Sengoopta argues, hormone and gland science amounted to a 'new physiology'; it would have been impossible for Thomas to have been unaware of it, even if it had not suddenly and terrifyingly made itself known to him in 1933 in the shape of his father's cancer of the mouth. On 10 September 1933, D. J. Thomas's treatment began with the insertion of radium-tipped needles into the tumour, followed by surgery. As his son told Johnson in December, 'my father is going up to hospital in London in the first days of January [1934] to have, as far as I know, several very necessary glands removed.'⁵³ If critical

Commented [EA5]: Sengoopta reference needed

sneering has marked Thomas down as a ‘glandular’ poet in a purely negative sense, he actually had very good reasons for being one.

And, as such critics have failed to notice, Thomas explored the subject, rather than merely succumbing to it, in a series of poems which can be seen as staging posts in the development of the process poetic, written between September 1933 and April 1934. In each, gland and hormone function are represented, albeit indirectly, from the point at which gender is decided (‘Shall it be male or female? Say the cells’), through the ‘tided cord’ of the umbilicus, hidden in the ‘browned womb’s weather’, to the ‘galactic sea’ of the breast and ‘[t]he child that sucketh long’ and ‘shoot[s] up’, and the adolescents who, like Thomas himself, have the ‘hallowed gland’ of the testes to send them ‘daft with the drug that’s smoking in a girl’.⁵⁴ Penises and vaginas lubricated with ‘the maiden’s slime’ infuse the ‘chemic blood’ with ‘urchin hungers’ which girl and boy are forced, because of ‘medieval’ levels of social repression, to ‘rehearse’ as ‘heat’ on a ‘raw-edged nerve’.⁵⁵ Among the short stories, in which the ‘inner weather’ of the poetry is externalised, the gland-science theme appears even more plainly. ‘The Map of Love’ finds Beth Rib and Reuben exhorted to ‘return to thy father’s laboratory [...] and the fatted calf in the test-tube’; and ‘The School for Witches’ alludes to testosterone injections given for penile erections (‘the lust of man, like a dead horse, stood up to his injected mixtures’).⁵⁶ ‘The Lemon’, the most striking example, opens in the laboratory of the sinister Doctor Manza:

Early one morning, under the arc of a lamp, carefully, silently, in smock and rubber gloves, the doctor grafted a cat’s head on to a chicken’s trunk. The cat-headed creature, in a house of glass, swayed on its legs; though it stared through the slits of its eyes it saw nothing; there was the flutter of a strange

pulse under its fur and feathers; and, lifting its foot to the right of the glass wall, it rocked to the left. Change the sex of a dog: it cries like a bitch in a high heat, and sniffs, bewildered, over the blind litter. Such a strange dog, with a grafted ovary, howled in its cage. The doctor put his ear to the glass, hoping for a new sound [...] Tomorrow there were to be new mastoids for the ferret by the window, but today it leapt in the sun.⁵⁷

Writing under the anti-vivisectionist influence of the Powys brothers, two favourite authors, Thomas presents Manza as a stock type: the callous mad scientist. But the protagonist of the story is Manza's son, Nant, a split self, who at certain points in the narrative identifies with his father. It is a reminder that stereotypes in Thomas are almost invariably more than they seem, and that while miscegenations like the 'tigrion' of 'Unluckily for a death' may be negative and death-dealing, his work more often celebrates bodily shape-shiftings and mutations, as in 'How shall my animal', with its metamorphoses of its 'beast' as snail, octopus, stallion, turtle, crab, fish and bird.⁵⁸ If he concedes that "[i]n the groin's endless coil a man is tangled", his aim is to enact the complex interaction between free will and biological drive, nature and nurture, in order to find ways to overcome fatality and determinism.

The discursive contexts of these struggles are important. Mechanical Darwinism and Social Darwinism dominated interpretations of the human implications of the new biological sciences in the 1920s and 1930s. Its most influential figures, Jacques Loeb (1859-1924) and Ivan Pavlov (1849-1936), proposed a mechanistic, materialistic conception of life and scientific control over it. Pavlov's main work, *Conditioned Reflexes*, translated into English in 1927, shaped all later physiological-behaviourist psychological theories, including those of the most

influential behaviourist of the twentieth century, B. F. Skinner (1904-1990), an advocate of mass conditioning as a means of social control. Belief in biological determinism, if not conditioning, was also matched by widespread support for eugenics, a support shared by leading writers of the day, including a Thomas favourite, Aldous Huxley.

Like Thomas in his early stories, Huxley is a good example of how issues relating to biology, heredity and genetics were often worked out in so-called 'marginal' literary genres, such as fable, gothic, and science fiction. Indeed, in his early work, Thomas might be said to be engaged in a debate with *Brave New World* (1932). The parallels are clear enough, as 'The Lemon' shows, and Thomas could claim to 'think in cells', like Huxley '[whose] god is cellular.'⁵⁹ Even so, the difference between them on the question of eugenics was profound. Eugenics is so repugnant to us today that *Brave New World* is usually taken to be an attack on it. However, as Donald J. Childs notes, Huxley intended only a satire on its excesses. In an article Childs published soon after the novel appeared, he observed: 'So far as our knowledge goes, negative eugenics – or the sterilization of the unfit – might already be practised with tolerable safety [...] we know enough [...] to foresee the rapid deterioration, unless we take remedial measures, of the whole West European stock.'⁶⁰ But for Thomas's generation, eugenics meant the Nazis, one of whose first acts after seizing power was the passing of the Nuremberg laws on racial purity and legislation to eliminate the 'feeble-minded' and physically impaired. Thomas was aware of the discourses surrounding eugenics – he dismissively name-checks one of its most vociferous public exponents, W. R. Inge, the Dean of St Paul's, in his correspondence – but never countenanced it in anything he wrote.⁶¹ On the contrary,

his work views life as sacrosanct, and cherishes that which society deems grotesque or 'unfit', albeit with a sometimes morbid relish.

It may be no coincidence that the main opposition among physiologists to Pavlovian behaviourism came from researchers in embryology, a subject which is all-pervasive in Thomas's poetry. Like that of the behaviourists', but drawing opposed conclusions, the work of the embryologists was also rooted in research on glands and hormones. Again, Thomas is likely to have been aware of the popularisers of these holistic conceptions of the human organism, such as Walter Cannon (1871-1942) and Lawrence J. Henderson (1878-1942), particularly the former's *The Wisdom of the Body* (1932). Both argued for the homeostasis of all organisms; that is, their self-regulation, governed by feedback mechanisms, in a constantly-changing adaptation to altering environmental or internal challenges. The obvious analogies with stable democratic societies led Cannon to offer homeostasis as a social model. Rather than finding in Darwin a sanction for pitiless competition, it suggested that cooperation, social regulation (rather than control), and equilibrium were the natural order of things. If this sounds like the 1930s debate between the dictatorships and the democracies, it is no coincidence. Arguably, Thomas used biological perspectives to frame what he considered to be the limited, external representations of historical determinism of the Audenesque poets ('History to the defeated / may say alas, but cannot help nor pardon'), in which the commandeering of bodies by glands and their agents mimic the diktats and secret police of a world sliding towards war.⁶² But his holism was not that of the liberal status quo and was never completely passive. The second and final appearance of 'gland' in the published poetry, in 'All all and all', is part of a visionary fusion of sexual liberation and people's uprising – 'the glanded morrow', the Marxist revolution as social gland-grafting.⁶³

‘In country heaven’: The Material-Spiritual Sublime.

In recent years there has been a surge of critical interest in the relationship between modernist writers and science. Very little has yet been written, however, about the attitudes to science of the writers who came of age in the 1930s, in the wake of high modernism, although we know that it was substantially different.⁶⁴ Eliot disliked the very notion of ‘popular’ science, Pound was repelled by the ‘formlessness’ with which the Einsteinian universe threatened the masculine hardness of the image, while Wyndham Lewis wrote *Time and Western Man* (1927) to inveigh against ideas derived from Einstein’s insights into space-time. None was happy with the messy, sexual body, although several felt that eugenic selection based on neo-Darwinian principles was legitimate, even desirable. Thomas’s position was almost the opposite of these. Even when he most resembles a modernist, as, for example, in his Lawrentian vitalism and archetypal blood and soil imagery, it is striking that his usages do not have a reactionary cast. The chief reason for this is that his scientific world-view precludes the older writer’s essentialism; Thomas’s use of the ‘mythic method’ resembles Joyce’s in this respect. Like Blake, Thomas attacked hyper-rationalist excess, and the later poems throw up mildly ironic epithets aimed at those who feel mechanical materialism has the measure of things: ‘the discovered skies’, ‘interpreted evening’, ‘known dark’, ‘managed storm’, for example.⁶⁵ But he was fundamentally a demystifier who felt that reverence for the universe was enhanced by scientific discovery, not – unlike the essentialist Lawrence – that it entailed an antagonism towards science.

Commented [EA6]: Different to what?

Predictably enough, perhaps, Thomas's populist modernism meant that his work evolved from a negative interpretation of the fatalism engendered by popular science to a more benign and positive one. From 1937 onwards, redemptive sexual love would be celebrated unqualifiedly, in 'the full assemblage in flower / Of the living flesh', as his poetry strove for a harmonising of self, body, and cosmos.⁶⁶ This trend intensified after 1944-45, as his poems ('Poem in October', for example) aspired not so much to embody process as to be the perfected artefact which, if still registering mutability, focused on a local, if stylised, natural world. Biographical reasons are usually cited for this mellowing – marriage (1937) and parenthood (1939) – but it also had to do with the onset of the war and (given that his style changed most radically in 1944-45) the shock of the degradation of the human body in the Nazi death camps and the unleashing of the annihilatory power of the new physics in the atom bomb. (The 'outcry of the ruled sun', which ends 'In Country Sleep', is that of the sun's nuclear furnace subordinated to the 'rule' of man, abuser of the sun / Son's power.)⁶⁷ What price a personal, existential angst, mediated by science, when faced with Hiroshima and Belsen, Thomas seems to ask. Hence the later poems' mourning of the death of the very notion of childhood, as in 'Fern Hill', their fear of another world war, as articulated in 'Poem on his Birthday's' 'rocketing wind', even as they praise, in Rabelaisian fashion, the 'dead and deathless [...] Love forever meridian through the courtiers' trees' of 'In the White Giant's Thigh'.⁶⁸

Against such fears, Thomas in his later years ranged between a precariously ecological, holistic vision of the green world and the sense of a spiritual principle implicit in the material universe. His final project, the *In Country Heaven* sequence, for which several of the later poems were written, envisaged its 'heaven' as a palpable 'star', populated by Earth's former inhabitants who would memorialise news of its

Commented [EA7]: I get this, but it takes a couple of attempts. Could you rephrase it?

passing in a nuclear apocalypse by telling tales to each other of their lives there. The hybrid combination of pastoral, sci-fi, and tangible afterlife is Thomas's most elaborate framing of spirit by a material, science-based universe, and reminds us that, like many contemporaries, he held that while science could increasingly approach the final truths of the universe, it would never conclusively reach and exhaust them. This, together with the inevitability and unknowability of death, involved the continuation of the metaphysical dimension of human existence, and the need to register it in his poetry. 'God', as 'Poem on his Birthday' puts it, is accordingly 'fabulous', both astonishing (and believed-in) and mere fable, non-existent.⁶⁹ This is a more elaborate version of the rhetorical doubleness of 'And death shall have no dominion', where the process vision and its poetic first came in, and the frame explains why Thomas's Christian imagery never coheres as a solid religious position; it is, rather, as it has been all along, a means for understanding the persistence of belief, a way of exploring its mechanisms. In this it echoes the way '[p]opular science writers have always been tempted to interpret scientific ideas in religious terms', with Eddington, Jeans, and Whitehead all cases in point.⁷⁰ Respectively, a Quaker, an idealist who held that the universe was 'nearer to a great thought than to a great machine', and a mystic who had a conversion experience in 1927, their public appeal was in part due to the fact that they argued for a harmony between scientific discovery and religion. Far from the new physics threatening faith, in their very indeterminacy they removed the attacks on faith by reductionist Victorian science. Thomas's own lyric harmony is weirder and more appealing than the scientist-popularisers, and points to the paradoxes of their positions more richly and knowingly than they ever could; but it is deeply indebted to and shaped by them, nevertheless.

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¹ Leslie Fiedler, 'The Latest Dylan Thomas', *Western Review* 11.2 (Winter 1947), 103-6 (p. 105).

² Paul Ferris, *Dylan Thomas* (Harmondsworth: Penguin, 1978), p. 2.

³ Ezra Pound, *ABC of Reading* (New York: New Directions, 1960 [1934]), p. 29.

⁴ *CP14*, pp. 116, 106, 42, 54, 69, 46, 47.

⁵ Thomas to Henry Treece, 6 or 7 July [1938], *CL*, p. 359

⁶ Thomas to Pamela Hansford Johnson, [early November 1933], *ibid.*, p. 64.

⁷ Ivan Phillips, 'I sing the bard electric', *Times Literary Supplement*, 19 September 2003, 14-15 (p. 14).

⁸ *Ibid.*, 14

⁹ Michael Whitworth, *Einstein's Wake: Relativity, Metaphor, and Modernist Literature* (Oxford: Oxford University Press, 2004), pp. 32-3, 41-3.

¹⁰ Although I only deal with the 'hard' sciences in what follows, Freud could, of course, be added to Darwin and Einstein to make up the triumvirate of the most influential scientific minds of the early twentieth century.

¹¹ Daniel Jones, *My Friend Dylan Thomas* (London: Dent, 1977), p. 57.

¹² *CP14*, pp. 46, 52, 57, 61, 63, 68, 71, 72, 74.

¹³ *Ibid.*, p. 71.

¹⁴ *Ibid.*, p. 23. Thomas's tendency, in the late 1930s, to rewrite his earlier modernistic concerns in self-mocking vein is apparent in this exchange on the same subject in the short story 'Where Tawe Flows':

'The mass-age produces the mass-man. The machine produces the robot.'

'As its slave,' Mr Humphries articulated clearly, 'not, mark you, as its master.'

'There you have it. There it is. Tyrannic dominance by a sparking plug, Mr Humphries, and it's flesh and blood that always pays.' (*CS*, p. 189.)

¹⁵ *CP14*, p. 66.

¹⁶ *Ibid.*, p. 61.

¹⁷ *Ibid.*, p. 39.

¹⁸ Thomas to Johnson, [week of 11 November 1933], *CL*, p. 73.

¹⁹ *CP14*, p. 40.

²⁰ *Ibid.*, p. 64.

²¹ Thomas to Trevor Hughes, [early January 1934], *CL*, p. 108.

²² *CP14*, p. 46.

²³ David N. Thomas (ed.), *Dylan Remembered: Vol 1. 1914-1934* (Bridgend: Seren Books, 2003), p. 141. Alfred North Whitehead (1861-1947) was a philosopher and mathematician who published extensively on logic, algebra, the philosophy of science, physics and education. Ideas of his echoed by Thomas include: nature as perpetual process; the interconnectedness of subatomic and cosmic events; simultaneity and perpetual potentiality; the impossibility of language as complete communication.

²⁴ Thomas to Johnson, [25 December 1933], *CL*, p. 100.

²⁵ *CP14*, p. 52.

²⁶ *Ibid.*, p. 24.

²⁷ Thomas to Johnson, 9-13 May 1934, *CL*, pp. 155, 160.

²⁸ Arthur Stanley Eddington (1882–1944) was an astrophysicist who explored the nature of stars; he discovered the relationship between their luminosity and their mass, calculated their temperature and density, and categorised different stellar types and life-cycles. His work following the experiment to determine the effect of gravity on light during the solar eclipse of 29 May 1919, the first to give observational proof of the correctness of Einstein's theories, made him a household name between the

wars. His other works of popular science included *Science and the Unseen World* (1929) and *Why I Believe in God: Science and Religion, as a Scientist Sees It* (1930).

²⁹ *CP14*, p. 172.

³⁰ James Hopwood Jeans (1877–1945) authored *The Mysterious Universe* (1930), *The Stars in Their Courses* (1931) and *The Universe Around Us* (1934).

³¹ Waldemar Kaempffert, ‘Eddington Expounds a Mystical Cosmos’, *The New York Times Magazine*, 9 October 1932, 9, 16 (p. 9).

³² *CP14*, p. 61.

³³ ‘Saint John Baptist’s Day’, in *The Book of Common Prayer*, intro. James Wood (London: Penguin, 2012), p. 241.

³⁴ Thomas to Johnson, 15 April [1934], *CL*, p. 135.

³⁵ *CP14*, pp. 88–89.

³⁶ Thomas to Johnson, [25 December 1933], *CL*, p. 98. (Italics in original.) Thomas seems to be echoing Eddington’s point in *Space, Time and Gravitation* (1920) that, in a finite but unbounded universe, light rays from a star could travel around the universe and converge again at their starting point: ‘[t]he ghost of a star appears at the spot where the star was a certain number of million years ago.’ See Whitworth, *Einstein’s Wake*, p. 175.

³⁷ *CS*, pp. 102, 103. I am indebted to Adrian Osbourne for drawing my attention to these two reworkings of the letter by Thomas.

³⁸ Thomas to Johnson, [late October 1934], *CL*, p. 195. Ferris’s insightful footnote tells us that ‘[e]arly in October [1934] a six-day international physics conference in London and Cambridge had prompted newspaper articles about the mysteries of the atom, including (to quote the *Times*) the fact that sub-atomic matter could ‘behave both as particles or as waves.’

³⁹ Thomas to Johnson, [early November 1933], *CL*, p. 57.

⁴⁰ Thomas to Glyn Jones, [mid April 1934], *CL*, p. 141; Thomas to Johnson, c. 21 March 1934, *CL*, p. 127.

⁴¹ John Goodby, *The Poetry of Dylan Thomas: Under the Spelling Wall* (Liverpool: Liverpool University Press, 2013), pp. 194-7.

⁴² *CP14*, pp. 58, 104.

⁴³ Thomas to Desmond Hawkins, 14 August 1939, *CL*, p. 448.

⁴⁴ Thomas to Johnson, 9 May 1934, *CL*, p. 155.

⁴⁵ *CP14*, p. 81.

⁴⁶ Ralph Maud, *Where Have the Old Words Got Me? Explications of Dylan Thomas's Collected Poems, 1934-1953* (Cardiff: University of Wales Press, 2003), p. 10.

⁴⁷ *CP14*, p. 81.

⁴⁸ *CP14*, pp. 107, 109-10.

⁴⁹ Thus Geoffrey Grigson claimed: 'The self in Mr Thomas's poetry seems inhuman and glandular', and '[Dylan] was [...] cartilaginous, out of humanity, the Disembodied Gland.' (Geoffrey Grigson, 'How Much Me Now Your Acrobatics Amaze', in E. W. Tedlock (ed.), *Dylan Thomas: The Legend and the Poet* (London: Heinemann, 1963), p. 160.) In the tradition of Arnoldian Celticism, 'glandular' is code for a nexus of cultural, class, gender and ethnic prejudice; it is implied that, with a sufficiently stiff upper lip, one can conquer this weakness; surrender to it, and you become less than human, nothing *but* gland. See Goodby, *The Poetry of Dylan Thomas*, pp. 186-7.

⁵⁰ As early as 1849, Arnold Berthold had made testicular grafts in roosters and hens, and on 1 June 1889, in front of the Société de Biologie in Paris, Charles-Édouard

Brown-Séquard became the first person to inject himself with ‘testicular juice, got from the male genital glands’.

⁵¹ *NP*, p. 154.

⁵² Better known as vasectomy, the deviser of this procedure, Eugen Steinach, claimed that severing the sperm ducts increased male hormone production, and the operation became popular for these, rather than contraceptive reasons. Yeats’s operation led to his being dubbed by Dublin wits ‘the Gland Old Man of Irish Letters’.

⁵³ Thomas to Johnson, [21 December 1933], *CL*, p. 82.

⁵⁴ *CP14*, pp. 59, 55, 57, 52, 82, 44, 60.

⁵⁵ *Ibid.*, pp. 69, 68, 60, 60; Thomas to Johnson, [early December 1933], *CL*, p. 76.

⁵⁶ *CS*, pp. 112, 67.

⁵⁷ *Ibid.*, p. 57.

⁵⁸ *CP14*, pp. 176, 100-1.

⁵⁹ Thomas to Johnson, [25 and c.21 December 1933], *CL*, pp. 99, 87.

⁶⁰ Donald J. Childs, *Modernism and Eugenics: Woolf, Eliot, Yeats, and the Culture of Degeneration* (Cambridge: Cambridge University Press, 2001), pp. 10-11, 18.

⁶¹ Thomas to Trevor Hughes, 8 February 1933, *CL*, p. 29.

⁶² W. H. Auden, ‘Foreword’, in *Collected Shorter Poems: 1927-1957* (London: Faber, 1977), p. 15.

⁶³ *CP14*, p. 63.

⁶⁴ See Whitworth, *Einstein’s Wake*, pp. 26-57.

⁶⁵ *CP14*, pp. 100, 159, 110.

⁶⁶ *Ibid.*, p. 176.

⁶⁷ *Ibid.*, p. 184.

⁶⁸ *Ibid.*, pp. 199, 197.

⁶⁹ *CPI4*, pp. 199.

⁷⁰ Whitworth, *Einstein's Wake*, p. 169.