Landscape with bulldozer: machines, modernity and environment in post-war Britain

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A natural history of the bulldozer

In the landscape of post-war Britain the bulldozer was not a native species but a naturalised one. Some might even have called it invasive. The bulldozer arrived in Britain as a consequence of war and as part of an army. Massed formations of crawler tractors with bulldozer blades, manufactured in the United States, crossed the Atlantic as vital elements of the vast armoury of equipment brought to Britain by the American armed forces during the Second World War (see Figure 3.1). The bulldozer itself, while in origin a civilian machine, has always had a close relationship with the technologies of mechanised conflict, and in important respects it was the Second World War that created the bulldozer as we know it today and spread its use throughout the world. Certainly it was the Second World War that played the key role in bringing the American bulldozer to Britain.

The origins of the bulldozer lie in agriculture and construction in the inter-war United States, and the twentieth-century bulldozer is a distinctively American device, rooted in distinctively American circumstances: it is a machine of big spaces and big structures, of cheap land and expensive labour, of wide horizons and sweeping transformation. And the word ‘bulldozer’, too, was made in America. When the Illustrated London News introduced the bulldozer to its readers in early 1941 it explained that “The word “bulldozer” is used in American slang phraseology to mean “to intimidate or coerce”, and the coercive powers of this almost incredible machine would seem to be considerable.” It is a word with a complex history, in which agriculture, mechanical engineering, conflict
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and politics intersect and connect, but that has consistently embodied and expressed a nexus of brute force and coercive violence. The first published uses of the word are from the United States in the 1870s and refer to organised racist violence in the politics of the post-Civil War era, particularly in the South.4 “Bulldozing” is the term by which all forms of this oppression are known,’ explained one writer of 1879, describing ‘the violent methods which have been employed to disfranchise the negroes, or compel them to vote under white dictation, in many parts of Louisiana and Mississippi’.5 The notoriety of the ‘bulldozers’ of the American South evidently brought the word and its associations into more general usage during the last quarter of the nineteenth century. By circa 1900 ‘bulldozers’ could be found in agriculture, mining and metal-working activities that involved the application of force to aspects of the physical environment that needed to be reshaped, exploited, and, in the terms used by Jon Agar in the opening chapter of the present volume to summarise the second of his technology/environment combinations, transformed into a component within a technological system.

In agriculture, the bulldozer was a vertical wooden blade used for smoothing rough ground, held in a wheeled frame and drawn by oxen, mules or by hand. These scraping implements developed in the American West and seem to have been particularly associated with the Mormon

Figure 3.1 A picture taken in the spring of 1944 of the US Army engineer depot at Thatcham, Berkshire, showing massed ranks of bulldozers and tractors being prepared to accompany the D-Day invasion forces. Source: National Archives and Records Administration/US Army Signal Corps 111-SC-189366.
farmers of Utah, sometimes being known as ‘Mormon Scrapers’. In the 1880s commercially available machines such as the ‘Western Bulldozer’ and the ‘Fresno Scraper’ used wheeled frames and pivoted blades, combining some of the attributes of the later mechanised bulldozers and tractor-driven scrapers. These devices were used in agriculture for clearing and preparing land and for earthmoving during construction projects such as railway building, confirming the value and adaptability of the principle that would later be employed by the mechanical bulldozer. In mining and quarrying, meanwhile, ‘bulldozing’ was the use of explosives to break large boulders into smaller pieces, either below ground in ‘bulldozing chambers’ or on the surface. The direct, unmediated application of powerful force to the thing being destroyed or reshaped is the key element that unites this use of the term ‘bulldozing’ to its uses in the parishes of Reconstruction-era Louisiana. Similarly in metalworking the ‘bulldozer press’ was a machine in which plates and bars were shaped by a powerful crosshead ram moving in the horizontal plane. The resemblance of this machine to the vertical blade of the bulldozer, pushing with brute force against the earth in order to reshape it, is very strong, and it is possible that the bulldozer blade, and thus the entire bulldozer vehicle, received its name from comparison with this piece of equipment, so that the derivation from the ‘bulldozers’ of the American South or from the Western agricultural implement may be indirect rather than direct.

Precise lines of etymological descent, however, are less important than the underlying denotative and connotative content of the term ‘bulldozer’, which remains consistent across more than a century of usage and a broad range of applications: the shared associations of brute force and violent coercion. Since the last quarter of the nineteenth century, to bulldoze something has consistently meant the use of force to reshape the environment: physically, but also socially and politically. As, during the 1920s and 1930s, the bulldozer developed into an ensemble of powerful tractor running on caterpillar tracks deploying a large adjustable blade – a creation that was honed and perfected in the 1940s under the pressures of war – these associations became ever more strongly entrenched.

The modern bulldozer, as with other mechanical earthmoving equipment, was known in Britain before the Second World War but was present only in very limited numbers and was not widely used in construction or related fields: ‘little was seen of this class of equipment until vast numbers were brought into the country from America during the Second World War’, noted one earthmoving expert looking back on the development of British construction technology in 1964. When the
engineer V.W. Bone addressed the Institution of Mechanical Engineers in 1936 on ‘modern developments in tractor-drawn excavator equipment’ he felt it necessary to describe the bulldozer in some detail:

My first example is the ‘Bulldozer’, which consists of a large rectangular plate reinforced at the bottom or cutting edge, located at the front of the tractor and attached through girders to the caterpillar track side frames. This type is especially adapted to pushing dirt, rock, debris, and other material ahead of the tractor. The blade has a vertical movement in relation to the tractor, which is under the control of the operator so that the thickness of the cut being taken by the blade on the ground or the amount of material being pushed along can be regulated.¹²

Bone went on to observe that the bulldozer was a new development that, although ‘employed extensively on large excavation projects, particularly in the United States of America’, had yet to achieve its full potential in Britain: ‘in this country we have only touched the fringe of the possibilities of tractor-drawn excavating equipment’.¹³

It was not until the introduction of thousands of earthmovers by the Americans during the Second World War that the bulldozer became an established feature of the British landscape. These machines built ports, roads and airfields to serve the war effort. They often worked in places that had seen no such large-scale or rapid development before, and in rural districts in which mechanical earthmoving and modern construction methods of any kind were a novelty. In 1941 the bulldozer was thought by the *Yorkshire Post* to be sufficiently unfamiliar to its readers for a brief description of it to be necessary: ‘American-built machines normally employed in road-making in rough virgin country’.¹⁴ The bulldozers described in this case were, as it happens, Canadian, and were working on forestry and land clearance in Scotland, but it was their US counterparts from 1942 onwards that were to have the greatest impact on the British landscape during the war. In September 1943 an article in *Picture Post* discussed the role of the bulldozer in sustaining Allied military activity, and stressed its distinctively American identity:

The most important new factor in our air policy is not a flying machine but a land machine – the bulldozer. This powerful caterpillar tractor, armed with a long steel blade, which digs into the ground, tears out boulders and tree stumps, and can even be turned on walls and small buildings, is the central machine in the whole
For wartime Britain the bulldozer was thus an icon of American technological modernity, bringing the techniques of that quintessentially American socio-industrial technique, mass production, to the reshaping of the earth itself.

In 1944 the writer D.W. Brogan reflected on the wartime significance of the American military bulldozer in his essay ‘The Bulldozer’, in which he identified this machine as a key symbol of the Allied war effort and saw in it a promise of the new society that victory would ultimately bring. Brogan began by listing various impressive Allied war machines: Flying Fortress bombers, amphibious trucks, Sherman tanks. But these instruments of war, he argued, were not as socially or politically significant for the Western world as what he termed ‘instruments of peace turned to the uses of war’:

The bulldozer is politically mightier than the tank, for in the bulldozer Europe has seen an instrument of power made directly by American civil society, serving indeed a military purpose, but bringing the Old World a flavour of the New, of that world of repeated mechanical novelty in which wars are not quite episodes, but are no more than great but manageable crises of American production.

The bulldozer thus embodied the way the great wartime coalition had been underpinned by American technological might and industrial organisation, and had brought the strengths of the New World to the aid of the Old. Brogan saw hope for the post-war world in a continuation into the era of peace of this coalition created to serve the purposes of war: he saw hope in the ongoing work of the bulldozer. He ended his essay by observing that having received American help to win the war, the Europeans would certainly want ‘to be left to manage their own affairs’, but in clearing away the debris of conflict and building the peace ‘they would like help from the country of the bulldozers, the country of humane miracles … The bulldozer has cleared away more than ruins.’

**Bombsites and bulldozers: rebuilding Britain**

‘During the Second World War’, observed one construction industry engineer in 1964, ‘crawler-mounted bulldozers became widely known
as miracle construction equipment. The British earthmoving and construction industries were well aware of the importance of the war in bringing American mechanisation into the British landscape, and of the significance of the transformation this represented. The war ‘brought to this country a far larger amount of muck shifting and other plant than we had been used to,’ commented one industry insider in the Proceedings of the Institution of Mechanical Engineers in 1947. ‘Scrapers, bulldozers, and dumpers, fathered in the USA, were of great use over here in the preparation of aerodromes, camps, temporary roads, drainage and tank traps.’ In his 1944 essay D.W. Brogan described the impact of the bulldozer on British industries and landscapes previously unmarked by rapid technological progress:

First came the bulldozer; it came into parts of England which had been left outside the main stream of mechanical progress, into East Anglia, into the southern rural counties. It came in and did more to change the face of the land in a few months than had been done at the same speed since Roman times … roadmaking and construction in general are the most backward parts of British technical practice. And the latest American devices were demonstrated in parts of England more backward than most.

In other texts the impact of this new earthmoving technology on an unchanging, enduring landscape, deeply rooted in the past (or at least upon a landscape represented in these ways), was narrated in such a manner as to emphasise historical continuity rather than disruptive change. ‘British rural roads excite admiration and wonder,’ observed the American authors of Bulldozers Come First: The Story of US War Construction in Foreign Lands (1944). ‘Constant military maneuvers, involving long convoys of trucks, tanks, and mobile guns, should rut and ravel their tar-macadam surface, but few signs of distress are visible.’ The endurance shown by British roads during the war, like the endurance shown by Britain as a whole, was rooted in history: ‘Many British rural roads have followed their present alignments for centuries. Cromwell or even Caesar may have started the consolidation of their bases.’ Thus the arrival of the new construction technology could be seen as congruent with the past rather than constituting a break with it, as the new world of modern technology came to the rescue of the old but did so by building upon its achievement and its values. In that sense the American bulldozer grinding its way along
the British rural road was a microcosm of the entire Anglo-American war effort.

As noted earlier, the bulldozer came to a Britain in which heavy construction and earthmoving equipment had previously found very little application. This may have been partly due to the innate conservatism of an industry still dominated by craft processes and work patterns, and sceptical of technical innovation, but also reflected the relatively restricted size of most construction projects compared with the huge schemes in America that were only made possible at all by extensive mechanisation. Environmental factors were also an issue restricting the use of bulldozers and similar machines in the British Isles, or were believed to be: many British engineers in the 1940s appear to have been convinced that bulldozers would not work well in wet weather and that British soils and geology were not suitable for them. Yet the wartime performance of the American machines left no doubt as to the benefits they offered. As well as literally preparing the ground for new construction, their contribution to clearing rubble was invaluable, both at the fighting fronts and in bombed cities in Britain. This vital work also brought the bulldozer a high degree of public visibility. When earthmovers were working at remote (and highly secured) airfields and other military sites they were largely out of sight, but in bombed city centres they became performers on a much more public stage. Their contribution was noted as early as 1941, with newspapers introducing their readers to ‘This new machine, the “Bulldozer” … now being used in London streets for clearing away bomb damage’, ‘this almost incredible machine’, ‘The bulldozer tractor’ that ‘can deal with all obstacles – debris, mud, water’. Gradually, as the number of bulldozers in Britain grew and their contribution to clearing away urban war damage become increasingly well known and appreciated, the machines entered the British imagination and became icons of wartime endurance and symbols of hope for the future. There was nothing the bulldozer could not do, it seemed, in this landscape of urban rubble: the Sketch’s humorous diarist even suggested in 1944 that if Britain ran out of real ruins to show the predicted influx of future tourists expecting to see the scars of war, ‘all we have to do is take a bulldozer and ram a few of our surviving public buildings’ to make some more. American men and machines played an important and well-reported role in rebuilding bomb-damaged sites in British cities, and in constructing both temporary housing and new permanent housing estates. The Daily Express reported in December 1944 on a site in London where the US Army was working on the construction of
temporary housing, and drew a sharp contrast with the labour-intensive, technology-averse practices on an adjacent building site in the hands of British workers:

American troops completely equipped with trucks and machinery, are maintaining a racing speed in clearing sites and laying bases for 600 temporary homes for Lambeth Council. On the British site yesterday, only partially cleared and levelled, a dozen workmen were unloading bricks, smoothing cement and laying drains for temporary homes. A single cement-mixer was the only machinery in action. An unused steam shovel stood at the front of the site.\textsuperscript{31}

The \textit{Express} reporter quoted the British foreman as telling the officer in charge of the American working party that ‘One of those bulldozers in a few hours could level the ground it’s going to take me weeks to clear.’\textsuperscript{32}

The rubble of destroyed buildings that bulldozers cleared away in urban areas was often collected and reused, some being transported as ‘blitz brick’ to rural construction sites where, worked by yet more bulldozers, it formed an aggregate foundation for new runways and other military installations.\textsuperscript{33} Thus the bulldozer constituted a very material link between the urban and the rural landscapes of wartime Britain. As D.W. Brogan had noted in his comments on bulldozers transforming rural areas,\textsuperscript{34} the impact of bulldozers on the landscape of wartime Britain was not limited to bomb-damaged towns and cities: ‘Bulldozers alter the face of Britain’ was one newspaper’s description of the way ‘virgin countryside’ had been ‘bulldozed’ for military purposes.\textsuperscript{35} ‘War has changed most things in our island home, but none more so than the countryman and the countryside,’ observed the \textit{Manchester Evening News} in October 1943: ‘Chestnut-covered walks have been torn up by bulldozers and excavators, rolling out giant aerodromes.’\textsuperscript{36} The changes wrought by the bulldozer were not limited to war construction, but reflected the increasing presence of this machine and others in the ordinary work of the land, as the countryside column of the \textit{Western Gazette} noted: ‘Ancient hedges are grubbed out by gyro-tillers; ancient banks and ditches are levelled by bulldozers.’\textsuperscript{37} The War Agricultural Executive Committees made increasing use of bulldozers as more machines became available, and bulldozers were used by the Women’s Land Army to clear and level land for farming.\textsuperscript{38} There was concern from some observers about the potentially destructive effect such machinery would have on the British countryside: ‘Because the military authorities and Government
have shown us what can be done in the way of removing hedges by the aid of “bulldozers”, people are wondering what will be the outcome.\textsuperscript{39} In general, however, the increasing involvement of modern bulldozers, scrapers, excavators and similar equipment in agriculture was welcomed as a beneficial side-effect of the war and there were efforts to expand it in order to increase the land available for agricultural exploitation. Questions were asked in Parliament about whether the government could take measures ‘to make use of the “bulldozers” used on aerodromes in order to clear the land.’\textsuperscript{40}

Beyond the work of the bulldozers in rubble clearing, civil and military engineering and agriculture within Britain, the exploits of similar earthmovers overseas at the fighting fronts of the war received much attention, further increasing the prominence of these ‘new weapons of the present war … these indispensable machines’.\textsuperscript{41} In North Africa and the Far East, and later in Italy, France and Germany, the role of the bulldozers that were an essential element of the Allied armed forces was extensively reported. Writing in the \textit{Daily Express} of the fighting in Sicily in the summer of 1943, Alan Moorehead commented that ‘The bulldozer was the tank of this campaign … The bulldozers pushed their ugly snouts right up to the front line.’\textsuperscript{42} For the \textit{Yorkshire Post} in March 1944 the bulldozer was ‘becoming an essential weapon in the Far Eastern war. The Japanese are excellent at light-weight warfare in the tropics; but they cannot rival the array of heavy machines … which the Allies are now bringing against them.’\textsuperscript{43} For \textit{Picture Post}, reporting on the advance of the Allied armies from their Normandy beachhead in August 1944, ‘The clanking and thumping of the bulldozer is as familiar at the front as the sound of the guns.’\textsuperscript{44} Tales of the heroism of bulldozer drivers, who were often exposed to enemy fire as they worked, were frequently reported, as in this example from the coverage of the advance of the American Fifth Army through Italy in October 1943:

\begin{quote}
At one of our crossings of the Volturno I watched a bulldozer cutting away a newly-won river bank so that tanks could cross. Within a few minutes a German shell directed from a hill overlooking the river killed the driver. I saw another man take his seat immediately and the work proceeded until another shell destroyed him and the bulldozer. Within the next half hour two more bulldozers and their drivers were knocked out by the deadly accuracy of the enemy fire. The last one was hit just as it had pushed the last load of muddy soil aside, allowing for the passage of tanks. No fighting troops could have died more heroic deaths than these four bulldozer drivers.\textsuperscript{45}
\end{quote}
Bulldozer crew bravery in a lower key was reported by *The Times* in February 1945, as British soldiers advanced towards the Rhine: when a bulldozer ‘came clanging along the road to Cleve on a dark night’ the soldiers leading the advance advised the driver and his mate that the road ahead was under small arms fire. “But we are armour,” they protested, and continued on their way through the darkness. This account also emphasises the ambivalent position of the bulldozer, simultaneously civil and military, part earthmover and part tank. This was a continuity that worked both ways, enabling the bulldozer to take its place in the military arsenal during the war, but also allowing it to act as a conduit for the continuation of a militarised culture of coercion and clearance into the landscapes of peace, in Britain and elsewhere.

The issue of bringing the wartime technologies of earthmoving to bear on the problems of the post-war British landscape was already exercising minds while the fighting was still under way. The task of reconstruction, observed the *Sphere* in December 1943, ‘will require the use of every available bulldozer, muck-shifter, scraper, tipper and dumper’, also noting that such machines would be ‘with the exception of jeeps, almost the only vehicles made to War Office specifications which will have a commercial value in peacetime’. By the autumn of 1945 the British government, keen to secure this modern technology for the economic benefit of the country, was negotiating with the Americans over the disposal of US earthmoving and construction equipment to the public works and commercial building sectors, and ministers were urging ‘the building trade to accept mechanization ungrudgingly and use it to the full’. Farmers too were being encouraged to adopt modern ‘labour-saving machines’ including crawler tractors and bulldozers, which were ‘admirable for levelling, clearing sites, back-filling trenches or excavating’. The 1940s and 1950s were a period in which technological modernity applied to agriculture became one of the most potent images of a modernising, progressive Britain, and in farming and forestry bulldozers were adopted with enthusiasm, partly driven by the easy availability of war surplus machines, and while not all experiments in their use were successful, these adaptable machines did find increased application in clearance and ground preparation works.

The use of bulldozers in British construction expanded greatly during the 1950s and 1960s, partly as a result of the huge size of new building works. Large-scale construction of building developments and new towns, roads and airports provided both extensive employment for fleets of modern bulldozers and other equipment, and an arena in which their technology and the ways in which they were used could be further
developed. In place of the laments of civil engineers of the 1930s and 1940s that British clearance and construction projects could not offer scope for the degree of mechanisation to be found in the United States, came an eager grasping of the opportunity offered by such schemes as the ‘motorway programme with its associated mammoth earthwork problem’.53 (See Figure 3.2.)

With its power and flexibility the bulldozer emerged from the Second World War as a universally adaptable wonder-machine, and a key element in the effort of rebuilding and reshaping the post-war landscapes of Britain. Peter Merriman has noted the important role of the Caterpillar company in exploiting the transition from war to peace in Britain through the employment of their machines, which had constituted a vital part of the Anglo-American wartime workforce, on peacetime projects. The appearance of British-built Caterpillar tractors and bulldozers in particular represented a new Anglo-American collaboration:

For the North American company Caterpillar the motorway marked the ‘beginning of a new era … of progress and opportunity’ which would be aided by their reliable, efficient and economic D8 tractor. During World War Two Caterpillar tractors could be seen to be part of an army of imported machines turning Britain’s waste-lands into

Figure 3.2  The construction of the M1 motorway through Bedfordshire in 1959 is marked by a swathe of bare earth, cleared and levelled by an army of machines such as the bulldozer prominent in the foreground. Source: photograph taken by Ben Brooksbank and reproduced by permission of the photographer.
spaces for the practice of an efficient, modern and mechanised farming industry, but the D8 was ‘now built in Great Britain’, at their new Glasgow factory. This was a British tractor ‘helping to build a better Britain’ and helping Caterpillar to fulfil their duty to strengthen the economy, society and ‘the nation’.54

This continuity legitimised the enterprise of physical transformation and made it part of a progressive historical process. As Scott Kirsch and Don Mitchell have written with reference to the large-scale civil engineering projects of the post-war decades, efforts to transform landscape ‘were part of an ancient, and in some ways technologically cumulative, history … And the conversion of military technologies to civil uses was also a long-standing enterprise.’55 Within this historical trajectory, the bulldozer became the symbol and the harbinger of a new world.

**The dark side of the bulldozer**

In Britain the bulldozer entered the public imagination in the 1940s and 1950s as a potent image of rebuilding and transformation. Even the incoming General of the Salvation Army was described in 1946 as a ‘bulldozer-driver’, and declared that he would ‘devote everything to making the Army the bulldozer of Evangelism, seeking to drive through the ruins and desolation of our shaken civilisation, a road by which men may travel toward the Kingdom of God’.56 Bulldozers were part of the modern mechanised transformation of a war-ravaged country, clearing away, repairing and rebuilding. The work they carried out clearing roads and rescuing people trapped by snowstorms during the severe winters of the post-war years, or clearing the damage caused by floods, also contributed to the positive image of these machines.57 Reviewing the clear-up operations following the floods of 1953 the Geographical Journal specifically praised the contribution of the ‘bulldozer and other war-time American machines’ that had ‘made a vast difference’ in the recovery work.58

As the 1950s and 1960s went on, however, darker and more destructive images of the bulldozer began to gain more prominence in public environmental discourse. The periodical Sport & Country summarised the ambiguities of the bulldozer as early as 1950, observing that ‘the bulldozer itself is going to be kept busy enough in connection with future agricultural enterprises’ because of ‘our country’s desperate economic plight’ but also asserting that ‘in the
The association of bulldozers with environmentally damaging extractive industries such as quarrying and open-cast mining was also an increasing matter of public concern in the 1950s. ‘Using bulldozers to tear away topsoil and wrench a mixture of coal and earth from seams near the surface not only disfigures more of the English landscape than we can spare but does lasting harm to the productivity of the land,’ declared the Manchester Guardian in 1955. As large-scale urban redevelopment and road building gathered pace the bulldozer became the single most potent image of the damaging schemes that threatened landscapes and communities. The seemingly inexorable advance of caterpillar tracks and huge steel blades across the land gave those opposing such schemes a new sense of urgency: ‘we will wake up one morning, a protester against a by-pass plan for Bangor told a reporter in 1953, ‘and find the bulldozers have come’ – the suggestion being that the earthmovers were effectively a hostile army of occupation moving under the cover of darkness to seize the land from its defenders.

The association of bulldozers with urban rebuilding made them into an ambiguous symbol, combining destruction and regeneration in a potent, mechanised agent of transformation. Louis MacNeice captured this aspect of the bulldozer in his 1962 poem ‘New Jerusalem’: ‘Bulldoze all memories and sanctuaries: our birthright / Means a new city, vertical, impersonal’. References to bulldozers and bulldozing became staples of newspaper articles reporting on controversial and damaging development schemes and protests held against such schemes frequently focused on bulldozers as particular targets. Protesters chained themselves to the bulldozers, poured honey or sugar into their fuel tanks, blocked their paths and lay down in front of their tracks. The act of throwing oneself in front of the bulldozers, or threatening to do so, became an almost ritualistic aspect of new developments, to the extent that the writer Douglas Adams was able to use this scenario as the starting point of his 1978 science fiction radio series (and subsequent novel) The Hitchhiker’s Guide to the Galaxy. Some in the new protest movements were wary of the image created by such direct action: in 1973 one member of the planning board responsible for the Lake District National Park warned his fellow board members, who were divided over the possible route of a road in the district, that they would ‘begin to look foolish’ if they associated with those who wanted to ‘lie down in front of bulldozers’. The risk of appearing foolish did not appear to trouble the
Duke of Rutland, however, who declared in the summer of 1977 that ‘he would lie down in front of the bulldozers’ to prevent work starting on the coalfield that threatened the Vale of Belvoir and his home, Belvoir Castle.\footnote{69}

During the 1960s and 1970s in Britain the word ‘bulldozer’ became a shorthand for the whole process of destructive development: machine became metaphor, the bulldozer standing as the symbol of the entire vast and seemingly unstoppable machine of development and its accompaniments of heedless politicians, greedy developers and faceless bureaucracy. During these years historic streets were ‘abandoned to bulldozers’,\footnote{70} in towns marked for rebuilding concerned observers saw ‘streets full of charm and character look sadly neglected, apparently waiting for the Great Bulldozer’,\footnote{71} and archaeologists were urged to ‘battle against the bulldozers’.\footnote{72} The ‘bulldozing’ of ancient monuments was in itself a particular focus of concern, with experts warning that ‘huge archaeological treasure houses will be lost for ever before the advance of the bulldozers’.\footnote{73} Whether what was threatened was long-established communities, vulnerable historic towns, or the fragile remnants of the past, the symbolism of the bulldozer as emblematic of a mechanised society heedless of what it destroyed was ever more widely reflected in critical press coverage and protest activities.\footnote{74}

Bulldozers were often anthropomorphised as destructive animals, and the sites with which they were associated were characterised in terms of war zones, battles and violent destruction: ‘Bulldozers groan where the hungry children used to play,’ wrote one reporter of the rebuilding of Jarrow in the 1960s, ‘and the part between the centre and the Tyne is like a battlefield now.’\footnote{75} Those opposed to destructive developers saw their struggle in terms of armies: ‘On the one hand stand the forces of “development”, their bulldozers massed like the chariots of old, their chemical equipment as menacing as the plagues of Egypt; on the other are ranged a small government agency, the Nature Conservancy, and a growing popular movement,’ wrote Bruce Campbell in the \textit{Guardian} as he introduced the first British ‘National Nature Week’ in May 1963.\footnote{76}

The bulldozer was seen as the emblematic machine of a new era in landscape transformation, a slow-moving machine perhaps but one possessed of enormous brute force, momentum and transformative power. Before the ‘age of the bulldozer’ previous generations had been content ‘to modify and improve their properties’, but now small settlements were ‘threatened by total demolition’, warned one architect concerned at threats to old buildings and small villages in 1962.\footnote{77} The same applied to the rural landscape, in which the increased
mechanisation of farming and estate management found expression in images of bulldozers uprooting trees, destroying habitats and stripping soil. An increasingly important concern of the environmental movement during the 1960s and 1970s was the threat posed to ‘traditional small holders and small farmers’, held to be responsible custodians of the Earth, by the ‘bulldozer-farmer’, hungry for land to exploit through modern machinery in order to gain the greatest yield in the shortest time. The various agencies of the British state were another target for environmentalists, and these same agencies were often among the most enthusiastic early users of the bulldozer on a large scale. Particularly notable in this respect, and to environmentalists particularly notorious, was the Forestry Commission: T.C. Smout has written of the role of ‘a new generation of drag-lines, bulldozers and mole ploughs’ in making possible the destruction of moor, bog and fen and its replacement by regimented plantations of Sitka and lodgepole pine in Scotland during the 1950s and 1960s. For people concerned to protect areas of natural beauty such as the Quantock Hills, the Forestry Commission was ‘the despoiler of beauty’ under whose aegis ‘bulldozers will take over’. As a machine equally at home in urban clearance and rural redevelopment, the use of which linked finance, economics, politics, agriculture and the environment, the bulldozer was seen as an all-encompassing symbol of the threat posed to the ecosystems of the Earth by the malign exploitative forces of modernity – an image summed up in The Ecologist’s cover illustration for July 1972 (see Figure 3.3), which showed a vast bulldozer looming threateningly over city and countryside alike.

In symbolising the destruction by faceless bureaucratic and commercial forces of the precious and fragile natural environment, the bulldozer could also be seen as the emblematic expression of the use of force by the collective to crush the individual, expressing a political idea that was gaining traction during the decades of the twentieth century during which the bulldozer itself rose to ascendancy. As the historian David Schalk noted in 1971, ‘The metaphor of the bulldozer or steamroller has been frequently used to describe the condition of twentieth-century man caught up in the vast impersonality of institutional society.’ This situation had been conceptualised by Cyril Connolly in 1944 as presenting humanity with a dualistic choice between individual freedom which permitted growth and renewal on one side, and bureaucratised, mechanised collectivisation on the other: ‘Well, which side are you on? The Corn-Goddess or the Tractor? The Womb or the Bulldozer?’ The year 1944 was of course also when D.W. Brogan had published his essay on the bulldozer as symbolic of the virtues of the
New World offering hope to the war-torn lands of the Old. Brogan saw synthesis leading to progress, whereas Connolly saw a choice between continuation and annihilation – but the bulldozer was at the heart of the argument for both.

Figure 3.3  Front cover of *The Ecologist*, July 1972. Source: reprinted with permission of The Resurgence Trust (www.theecologist.org, www.resurgence.org).
On the tracks of modernity

‘The green mantle of Earth is now being ravaged and pillaged in a frenzy of exploitation by a mushrooming mass of humans and bulldozers,’ warned Michael Soulé in a pioneering work on conservation biology in 1980. Forty years after the Second World War led to its proliferation across the globe and the acceleration of its career of brute-force clearance and transformation, the bulldozer had become an emblem of global devastation rather than global progress. This dark side of the bulldozer had always been an innate aspect of a machine whose power to create was always rooted in destruction. The work of the bulldozer is to push aside, to clear away, to bury. It is a machine that prepares the ground for the new, and in doing so it obliterates the old. It buries the evidence, levels the ground and moves on, both creator and destroyer. In the post-war world the bulldozer negotiated the passage from past to future across the rubble-strewn landscape of rebuilding. The future was highways, hospitals, power stations, shopping malls and spreading suburbia, with the bulldozer, itself becoming ever larger, more powerful and more efficient, leading the advance of urban modernity.

At the beginning of the bulldozer’s career in wartime and post-war Britain it represented a distinctively American technological modernity, welcomed as clearing the way for society to move towards a brighter future. Over the next half-century that promise was dimmed by uncertainties and fears, and the very Americanism of the bulldozer seemed itself an aspect of its negative characteristics as symbol of ‘western or American cultural imperialism, lurching across the globe like a runaway bulldozer levelling everything in its path’. The bulldozer of the 1940s and 1950s had stood as an emblem of progress, but the hope for a better future that technology had long seemed to offer was, for an increasing number of people in the era of Cold War, environmental destruction and urban expansion, far outweighed by the dangers it unleashed. A leitmotif of the nuclear age (hinted at in Soulé’s imagery of a threatening ‘mushrooming mass’) was the partnering of the bulldozer with the atomic bomb to create a summary image of the all-encompassing destructive power humanity possessed in the modern technological age. In 1963 Lewis Mumford warned that ‘our age will be known to the future historian as the age of the bulldozer and the exterminator’ given that ‘the building of a highway has about the same result upon vegetation and human structures as the passage of a tornado or the blast of an atom bomb’. The architectural historian James Marston Fitch was suggesting by the early 1970s that
‘man now runs the literal risk of losing all the past, man-made and natural – either piecemeal, to the bulldozer, or instantaneously, to nuclear weapons’, and the same theme was revisited in 1984 by the philosopher and environmentalist Richard Routley to argue for the connectedness of environmental ethics and nuclear ethics: ‘The Bomb and the Bulldozer are out of the same technological Pandora’s Box.’ From being the machine that would clear away the debris of the past and reshape the land to create a bright future, the bulldozer had become symbol of a technologically driven apocalypse that threatened to grind past, present and future alike into destruction beneath its inexorable tracks and irresistible blade.

Notes
1 For the American bulldozer’s role in the Second World War, see Francesca Russello Ammon, Bulldozer: Demolition and Clearance of the Postwar Landscape (New Haven: Yale University Press, 2016), 21–93.
10 Leffingwell, Caterpillar: Farm Tractors and Bulldozers, 117.
V.W. Bone, ‘Modern Developments in Tractor-Drawn Excavating Equipment’, *Proceedings of the Institution of Mechanical Engineers* 137 (1937): 345–53. The original meaning of ‘bulldozer’ was the blade and its associated apparatus, and this is the way in which Bone is using the term, but its application quickly expanded to encompass the entire ensemble of tractor plus blade. Until after the Second World War ‘bulldozers’ (i.e. blades) were manufactured by different companies from those building the tractors to which they were attached.


Brogan, ‘The Bulldozer’, 204.


Bowman et al., *Bulldozers Come First*, 20.


*Liverpool Daily Post* (25 January 1941): 4. This text is part of the caption for a large picture of a bulldozer clearing away rubble.


‘This Will Shift Anything’, *Yorkshire Evening Post* (1 February 1941): 5.


Brogan, ‘The Bulldozer’, 204.


‘The Week in Farm and Field’, *Western Gazette* (24 September 1943): 5.


Ammon, *Bulldozer*, 11.13. For analysis of another ostensibly peaceful civilian technology deeply implicated with military significance see Jacob Ward, ‘Oceanscapes and Spacescapes in North Atlantic Communications’, Chapter 10 this volume.

‘When We Get Back to Road Transport’, *The Sphere* (18 December 1943): 376.

‘Mechanized Building’, *The Times* (25 September 1945): 2; *Hansard*, vol. 415, col. 192W.

‘Mechanical Aids for the Builder or Farmer’, *Sport & Country* (23 November 1945): 334, 335.
See David Matless ‘The Agriculture Gallery: Displaying Modern Farming in the Science Museum’, Chapter 6 this volume, for further discussion of this point.


Peter Merriman, ‘“Operation Motorway”’, 116–17. The quotations within this passage come from Caterpillar advertisements published to coincide with the opening of the M1 motorway on 2 November 1959.


Horace Phillips, ‘Power-Farming and Game Birds’, Sport & Country (11 January 1950): 2. The main concern of the article was the effects of increasingly mechanised farming on game-preserving and shooting.


“The Future of the Quantocks: An Area of Great Natural Beauty is in Jeopardy’, The Sphere, 3 December 1949, 347. See also Tim Cole’s discussion of the significance of the Quantocks in the context of road-building: ‘About Britain: Driving the Landscape of Britain (at Speed?)’, Chapter 7 this volume.

The Ecologist, 2, no. 7 (July 1972): front cover.


