Gaining Ground: Bomb Rubble, Reclamation and Revenance

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Abstract

Vast quantities of waste rubble produced through demolition, natural disasters and conflict form part of the globe-spanning, anthropogenic deposit that has been called the “archaeosphere”. Whilst such material is often considered “waste” and of little value in the immediate aftermath of deconstruction or destruction, rubble rarely remains “wasted” for long and becomes reused in new cycles of construction. While architectural salvage and spolia are relatively well studied, the reuse of demolition rubble in the creation of new terrain (reclamation) is rarely discussed.

Responding to this, I discuss how World War II bomb rubble was used to reclaim ground from Hackney Marsh and Leyton Marsh in East London. This waste material not only provided valuable new terrain for leisure facilities, but also led to a broad array of unexpected and emergent uses and valuations, including as site of footballing heritage and place of remembrance and contestation.

Introduction

Large areas of contemporary cities are built on artificial terrain created through land raising and reclamation projects. Such processes have been underway for thousands of years using a variety of methods (Hudson 1996). As Matt Edgeworth has recognised, it can be hard to grasp the scale of such interventions, where humans seem to be rendered almost absent and “at a distance from the artificial features they create” (Edgeworth

Keywords: bombing, East London football heritage, land reclamation, rubble, waste
2010, 142). Archaeology’s tangible engagement with the materials of such land making – whether individual rubble fragment or millions of tonnes of mass fill – offers a direct means to examine the implications of creating new land in the Anthropocene.

Seth Denizen notes that “the soil and the city are mirror images of each other, not only in the negative image of extraction […] but also in the positive image of deposition” (Denizen 2013, 41). This “positive image of deposition”, both literally and figuratively speaking, is my focus here. Just what is gained when we fill-in, build-up or dump waste materials to extend the “urban littoral frontier” (Hudson 1996)? Conversely, what absences – material, social or otherwise – are required for such processes to take place?

My focus in this paper is on a specific form of waste: demolition rubble produced from the Luftwaffe bombing of London during World War II that was subsequently used to reclaim land from two nearby marshes. These – Hackney Marsh and Leyton Marsh – are situated on the floodplain of the River Lea (a major Thames tributary) just to the north of Queen Elizabeth Olympic Park, the site of the 2012 Games (Gardner 2022, chapters 6–7). Prior to the industrial period, these were common grazing land and were often subject to extensive flooding. During and after the war, the ground level of both marshes was raised by up to three metres through the dumping of millions of tonnes of bomb rubble. This deposition had the effect of creating valued new terrain for leisure and represents one of largest single layers of London’s broader ca. six billion tonnes of anthropogenic deposits (Terrington et al. 2018, 33).

The raising of the level of the marshes also led to a broad variety of unplanned and emergent effects, including as a habitat, as a place of valued footballing heritage, as a space of contestation and threat, and as a terrain for forgetting and remembering the Blitz itself. Rather than seeing waste material as simply a homogenous, fixed, substrate for construction, re-examining such land reclamations offers us an opportunity to study the heterogeneous production of part of the “archaeosphere” – the sum of all human cutting and filling into the Earth (Edgeworth et al. 2015). As part of this deposit, waste bomb rubble acts as a substance that follows a distinct itinerary (sensu Joyce and Gillespie 2015), one that rapidly moves from being a material of death and destruction into stuff of the imagination, generative of both new land and new forms of value.

**Reclamation in theory and in practice**

When I was a child, I spent hours on the beach and beside streams building dams made from rocks, sand, driftwood and rubble, holding back the flow to fleetingly “reclaim” land from water. Back at home, playing *SimCity 2000* (Wright 1993) on the computer, with a few mouse clicks I could effortlessly raise terrain from the depths; either adding valuable simulated real estate or dooming thousands of virtual citizens to a watery grave. There was something attractive about this ability to remake terrain physically or virtually as I wished, though it seems difficult to articulate just why. Building dams or creating new land through play seems to be – anecdotally at least – a very common childhood activity. While my attempts to find literature on this habit have drawn a blank, it seems possible that the affordances of littoral environments offer a productive conceptual terrain that stimulates child development (Clark and Uzzell 2006).
Justifications for land reclamations back in the real world range from a need for construction space, real estate speculation, harbour construction, changing river or sea levels, flood defences and waste disposal (e.g. Seasholes 2003). Often a combination of these factors operate concurrently and, of course, such needs vary dramatically across locations and temporal periods (Hudson 1996).

There are several kinds of land reclamation. In many cases, rivers and tides are directed to capture sediment and artificially “grow” land within estuarine environments (Byrne 2018, 278). In other kinds, mechanically dredged sand is used to “build” islands from scratch, as seen in the Persian Gulf and South China Sea, or to “nourish” eroded beaches (Matza and Heller 2018). The most common means of reclamation involves construction of a seawall, levee or dyke around flooded or low-lying surfaces which are then drained by gravity (i.e. drainage channels) or machinery (e.g. Renes and Piastra 2011). Remarkably, some 17% of the present surface area of the Netherlands has been produced in this way (Modus 2021).

In contrast, landfilling, the dumping of materials into low-lying areas to raise terrain above an existing water level, is the oldest and, arguably, most basic form of land reclamation, and this is the form I investigate here (Hudson 1996, 15–16). The substances used for landfilling may include waste spoil and rock (e.g. Hailey 2013; Yilmaz 2018), domestic and industrial waste (e.g. Raybould et al. 1987; Taft 2018) and, more rarely, the hulls of ships, and ballast (e.g. Dunlap 2010; Burström 2017, 61).

However undertaken, contemporary land reclamation projects are subject to economic arguments, engineering practicalities and a range of political difficulties. For example, numerous conflicts have erupted over theft of sand for island building (Barkham 2018). In other cases, efforts to reclaim land can see land- or usage rights curtailed (Grydehoj 2015; Taft 2018). In recent archaeological research, for example, Steyne (2012) has shown how the late-nineteenth-century construction of London’s Thames Embankments had a dramatic and devastating effect on established working class riverside inhabitants.

Land reclamation projects (and related attempts to control flooding) are also notable for their appearance in a broad variety of cultural forms, from literature (e.g. Ritson 2018) to land art (e.g. Ensel 2019). As we will see in East London, reclamation also leads to novel social opportunities (e.g. Byrne 2017), as well as the unexpected generation of new forms of natural and cultural heritage (e.g. DeSilvey 2020, 298).

**Archaeological Approaches to Reclamation and Waste**

While there have been extensive studies of the engineering, economics and politics of large-scale acts of land reclamation (e.g. Hudson 1996; Masoud 2021), there would seem to be a relative lack of archaeological or heritage interest in the activity (and the linked social implications) of making artificial terrain for construction – as opposed to the usual archaeological conceptual transformation of discarded materials into valued artefacts. This seems surprising, given the vast array of sites that involve purposive reclamation with dumped waste, particularly in major cities where space has long been at a premium, such as Istanbul (Constantinople) or London.

That said, important research has examined how specific materials – such as coal ash (MacBride 2013) and ballast (Burström 2017) – have been used for landscape modifi-
cation, as well as how artificial terrain can come to be valued even while its origins are almost forgotten (Yilmaz 2018). Significantly, on the reuse of bomb rubble for construction in particular, Antonius Robben has recently written of how World War II material in Rotterdam acted as a “metonym” for the bombing itself. He notes that
destruction does not finish the agency of buildings. Ruins and rubble seldom end up permanently as waste on a dumping ground because material agencies transform into post-ruination agencies that ensue new affordances and meanings. (Robben 2021, 327–328)

Reuse of bomb rubble is thus also implicated in new socio-cultural formations. For example, World War II rubble hills in Germany (trümmerbergen) have been called “anti-monuments” to the gross architectural neo-classicism of the Nazi regime (De Maio 2013, 533–534). The rubble (trümmer) itself also provided a particular aesthetic in post-war German literature (trümmerliteratur) and films (trümmerfilm), sometimes acting to reinforce a sense of victimhood and a wilful forgetting of complicity with the Nazis’ crimes (Sebald 2004).

In one of the only archaeological research projects with such bomb rubble in the UK, Emma Marsh has recently analysed demolition waste from wartime bombing dumped at Crosby Beach, near Liverpool. Here fragments of buildings are identifiable from stonework, and, despite being worn down by decades of tides, Marsh has conducted photogrammetry and successfully identified some of the material with the aid of online appeals.1 While the rubble of the Lea Marshes is far less accessible (being buried), it similarly has the ability to act in an agentive, generative manner, and to create a broad array of valuations today, including in connection with the Blitz.

Others have also written extensively on the reuse and persistence of other wartime materials long after their intended purpose has passed, whether as barely noticed remnant or as a kind of “dark heritage” (e.g. Macdonald 2009; Moshenska 2010). For example, Stein Farstadvoll has written recently about the vast quantities of barbed wire left on the landscapes of northern Norway after World War II. He describes how such material (or, indeed, materiel) has persisted in a series of literally entangled afterlives; the wire simultaneously presenting an ongoing threat to humans and animals, a free resource for new fencing, a raw material for artworks and a materialisation of “war memories”; an artefact with “literal strings tied to the past” (Farstadvoll 2022, 98).

To explore such continuing and emergent valuations of the material aftermath of conflict further, I also draw on the “waste turn” of the social sciences over the last two decades, including important archaeological discussions of the materiality and conceptualisation of value of rubble, dumps and waste (Reno 2013; Olsen and Pétursdóttir 2014; Dawdy 2016; Rico 2016; Graff 2017), and earlier pioneering work by Bill Rathje (Rathje and Murphy 1992). Such work complements the long-established theorisation of waste in anthropology (e.g. Douglas 2002 [1966]; Gordillo 2014), while the rapidly growing field of discard studies recognises that “a strong case can be made for waste as the signature of the Anthropocene” (Hird 2016 243) and, especially, for “the role of waste and wasting

1. See her “Archaeology Beach Project” Twitter account: https://twitter.com/ArchaeoBeach.
as a technique of power” (Liboiron and Lepawsky 2022, 7). In the case of Hackney and Leyton marshes, this has included the significant – and almost unchecked – power to consign waste to the margins of cities to create new land.

**Methodology**

To understand how dumped bomb rubble exists in and under Hackney and Leyton marshes, both sites were investigated with repeat walkover surveys with GPS plotting of key features into a digital context register in a mobile GIS application (QField). This information was then added to a QGIS database to visualise the intermingling of historic and contemporary features and to facilitate historic land characterisation with historic maps and aerial photography. This was complemented with extensive archival research, on-site photographic recording and, where possible, interviews with individuals connected with the site. This mixed methodology reflects the complex layering of these sites and the material “itinerary” of the waste itself (following Joyce and Gillespie 2015); it traces the origins of the bomb rubble from nearby bombsites (below), and how, at different points, the rubble seems to disappear and resemble a pre-existing, unmodified landscape, while at other times its artificiality re-emerges, sometimes threateningly. Excavation of the marshes was not possible given their public ownership, contaminated deposits (below) and use as leisure spaces; however, later in the paper I speculate on what excavation might add to how these waste landscapes are valued today.

**Hackney and Leyton Marshes**

Leaving the northern edge of Queen Elizabeth Olympic Park in East London, crossing the A12 dual carriageway and then the River Lea at White House Bridge, one emerges into an enormous green expanse punctuated by bright white football goal posts: this is Hackney Marsh (sometimes pluralised as “Hackney Marshes”). If you look down when crossing the bridge, it is clear how much higher the top of the 73 ha “marsh” actually is than the riverbank; this is the result of the 3 m depth of bomb rubble (over 2.2 million cubic metres) dumped here between 1940 and 1946.2

Striking out northwards across this, the “Main Marsh”, avoiding footballers and errant dogs, we can follow the Lea Navigation canal a mile or so upriver before we come across an unprepossessing field: Leyton Marsh. Smaller than Hackney Marsh, at 9 ha, this marsh hosts not football pitches but sunbathers, picnickers and kite flyers. Leyton Marsh is also covered with 3 m of bomb rubble, making it considerably higher than surrounding areas, especially the semi-waterlogged Walthamstow Marshes to the north. As with Hackney Marsh, the bomb rubble is only apparent insofar as it requires the minor exertion of climbing the slope it forms above the surrounding terrain. Otherwise, the scene is uncannily pastoral; from the platform of the rubble, one can catch glimpses of cows wallowing in the mud in Walthamstow Marshes; rare flowers also grow here, while the odd kestrel hovers overhead.

Hackney and Leyton marshes are two of a multitude of quasi-natural wetlands and floodplain areas that, along with several reservoirs, are part of the 68 km-long River Lea

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system (Figure 1). The floodplain of the Lea (sometimes spelled “Lee”) once provided important agricultural produce for London (Glennie 1988; Powell 2012), and was a crucial transport corridor prior to the development of the railways and road network (Gardner 2016; Clifford 2017). The area to the south of the case study marshes was once called “Stratford Marsh” this much-modified area has recently been transformed into the aforementioned Queen Elizabeth Olympic Park (the main site of the London 2012 Games). While the reclamation of Stratford Marsh began in the post-medieval period (Powell 2012), Hackney, Leyton and Walthamstow marshes in contrast remain relatively undeveloped. Both Hackney and Leyton marshes were historically held in common for the use of tenants to graze animals, and, after their purchase in the 1890s by the London County Council (LCC), became legally protected from development as
Metropolitan Open Spaces (but see Iles 2007). They are now managed by the Lee Valley Regional Park Authority (LVRPA) as places of leisure and wildlife.

**Bombing, Rubble and Reclamation**

Hackney and Leyton marshes were reclaimed with the rubble of buildings destroyed or damaged by the aerial bombing of London by the Nazi Luftwaffe – part of the UK-wide “Blitz” that occurred between September and May 1941, which was followed by more limited bombing in January 1944, and “Vengeance Weapon” flying bomb (V1) and missile (V2) attacks between June 1944 and March 1945. The bombing killed some 60,595 across the UK, with 86,182 “seriously injured” (Overy 2014, 194). The 1940–1941 raids killed ca. 20,000 in London alone, while over 300,000 of the city’s houses were destroyed or damaged beyond repair, along with thousands of factories and municipal buildings (Ziegler 1995, 161). Soon after the Blitz began, a London County Council-based organisation that became known as the War Debris Survey (WDS) was formed to clear sites and to find places to dispose of this rubble (Woolven 2013).

Records from the LCC Parks Department show that dumping began on Hackney Marsh in December 1940, “at the urgent request of the Government” (Figure 2). This was nonetheless a systematic and well-planned process; a 1942 Ministry of Home Security memorandum instructs that “[s]ites for tips should be studied and selected. The opportunity may be taken to make up to new levels land which is subject to flooding or to improve other waste and uneven sites.” It is less clear when filling of Leyton Marsh started, though aerial photographs suggest this began only after the war, with work complete by 1949.

While the marshes were useful, mostly unoccupied spaces for London’s rubble, the filling of them both was always intended to improve the area rather than just being an act of waste disposal. War Debris Survey minutes note that Leyton Metropolitan Borough Council (now part of the London Borough of Waltham Forest) directly asked for dumping to take place, with plans for “the filling of the marshes [originally] part of [their] peace time development programme.” While the infilling of both marshes to some extent helped mitigate the frequent flooding of the area, this was a socially progressive municipal reclamation, manifested most obviously in the creation of over 130 football pitches, 50 cricket pitches and associated changing rooms and shelters. Unlike in some other cities, almost no other new building work took place on the new terrain, as a result of

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4. London Metropolitan Archives: LCC/CL/CD/03/115, 5

5. Aerial photographs can be viewed on Historic England’s Aerial Photo Explorer and on the website Britain From Above: (1) 1941, lower left (raf_241_ac4_v_0048, https://historicengland.org.uk/images-books/archive/collections/aerial-photos/record/raf_241_ac4_v_0048); (2) 1946 (raf_3g_tud_uk_122_v_523); (3) 1949, with eight football pitches (EAW027652, https://www.britainfromabove.org.uk/en/image/EAW027652). Details of the logistics of the operation on site are frustratingly scarce, but see LMA LCC/CE/WAR/02/018 War Debris Survey and Disposal.


FIGURE 2. RAF aerial photograph of Hackney Marsh, 10 September 1946 (north at top). Mounds of bomb rubble can be seen on the Main Marsh (dark grey piles on lighter-coloured ground). The eastern area of the marsh (at right) is already grassed over. The River Lea forms the sinuous tree-lined curve around the north of the marsh, while the Lea Navigation canal divides the marsh from the nearby neighbourhoods and power station at left. Leyton Marsh is further to the north beyond the waterworks’ ponds and is not visible in this image (source: Historic England’s Aerial Photo Explorer [raf_3g_tud_uk_230_vp1_5047, https://historicengland.org.uk/images-books/archive/collections/aerial-photos/record/raf_3g_tud_uk_230_vp1_5047]. RAF photography, flown 10 September 1946. Reuse not permitted).
the pre-existing protected status of both sites. This also presents a significant difference from much of the rest of London’s artificial terrain both on bomb sites and other areas of infilled or reclaimed land (Terrington et al. 2018). For example, London’s South Bank Exhibition (as part of the 1951 Festival of Britain) was partly built on embankments on the River Thames filled with cleared bomb rubble (Gardner 2022, 131–132).

What usually goes undiscussed in accounts of the marshes’ socially progressive infilling is to what degree this process transformed the environment of both sites. As shown below, the raising of the ground did have the effect of increasing flood risks outside of the infilled area. While not my main focus here, the dumping of the rubble on what was ca. 80 hectares of seasonally flooded marshland would presumably have also had a significant effect on the area’s pre-existing biodiversity. That said, there were large numbers of football pitches at both marshes before the 1940s reclamation (albeit frequently flooded), so the transition may not have been as abrupt as one might imagine. Interestingly, however, at Leyton Marsh the reclaimed ground is now valued by community groups primarily as an area of wildlife and green space, rather than as a formal sports ground (as it was originally) and – as I shall discuss below – it is this valuation that continues to be strenuously defended when the site is threatened by development.

Rubble Heritage: Football and Community

While the most obvious planned consequence of the 1940s filling of both marshes was the provision of dry land to play sports, it was the unexpected emergence of Hackney Marsh as a world-famous centre for grassroots football (and football heritage) for which the area is now most famous.

Hackney Marsh – “the Marshes” in this context – is said to be “internationally known as the spiritual home of Sunday league football” (London Borough of Hackney n.d.), as well as being a “mecca” and “utopia” for football (Kasanga 2017). A recent guide to London’s football history by Charlie Connelly describes how “the ghosts of thousands of old footballers roam the fields” and that

[w]hen people talk of football shrines, discussions immediately focus on Wembley, Old Trafford, the Nou Camp or the San Siro. For me, however, this country’s greatest shrine can be found just off the A102 on the way to Leyton [i.e. Hackney Marsh]. (Connelly, London Fields, quoted in Hill 2018)

Part of the reason for this adulation is the fact that numerous famous English players spent their formative years training on the Marshes (including Bobby Moore, David Beckham and Ian Wright). The Marshes have also featured in numerous advertising campaigns and publicity stunts. This includes a now-iconic 1997 Nike advert (sound-tracked with Blur’s *Parklife*) that featured legendary players of the ’90s English Premier

8. “Sunday league” specifically refers to amateur soccer games that are held in league competition every Sunday rather than on Saturday (the more traditional day for semi-professional or professional leagues). Sunday league is understood to be more accessible (i.e. more amateur focused) and taken to some degree less seriously as more professionalised leagues. Some say this is because many of its players remain hungover from the night before (e.g. [https://en.wikipedia.org/wiki/Sunday_league_football](https://en.wikipedia.org/wiki/Sunday_league_football)).
League – Wright, Eric Cantona, David Seaman and Robbie Fowler – playing with ordinary Sunday league players on the Marshes.9

While football was played on both Hackney and Leyton marshes before the war, the fame of Hackney Marsh in particular seems to have grown exponentially only after the arrival of the rubble. For example, a 1953 newsreel relates that, such was demand for the (then) 108 pitches, teams had to book games six to ten months in advance (British Pathé 1953)!

A sense of accessibility and diversity in the Sunday league here continues to the present day (Burdsey 2009, 708), and this was recently captured by photographer Simon Di Principe (Figure 3). His 2016 project, entitled Grassroots (Di Principe 2016), began after discussing football at Hackney Marsh with his father, Franco, an Italian immigrant who moved to London in the 1960s. Interviewing Simon, he related to me that his father spoke little English when he first moved to the city and was very lonely. However, having met some fellow Italians, Franco was then encouraged to come up to the Marshes to play for a Clerkenwell-based team called Mazzini Garibaldi Sports. This team, as part of the Sunday League, provided a community for him and others, where “football could bring people together”, and “[gave] them a sense of something to do, [and] an escape from their mundane lives” (Di Principe, interview 2022).

9. Nike also released a limited edition sportswear range “designed to celebrate the amateur football heritage and culture of Hackney Marshes” but used the Hackney Council logo without permission, prompting a successful copyright claim against the brand.
Simon’s photographs capture how this footballing tradition continues to persist as a form of intangible heritage grounded in this distinctive, artificial landscape. Recovering from a broken leg obtained playing five-a-side, he spent nine months coming to the Sunday league games and asking players to have their picture taken. His analogue, medium-format, portraits semi-intentionally resemble “football stickers” that children (and some adults) collect to stick in “Panini” sticker albums (Figure 3, right). While not setting out to show Hackney Marsh as a heritage site, Di Principe nonetheless recognises that his work celebrates a longstanding tradition. That said, he notes that, while players are aware of this heritage, ultimately, “they’re just down there to have a game of football and kick the crap out of each other. And then, get on with the rest of their weekend” (Di Principe, interview 2022).

The filling of Hackney Marsh with rubble not only led to this footballing heritage and the creation of a focal point for London’s diverse communities; it also provided a terrain of inspiration and creativity for Di Principe and other artists and writers who recognise its rich history (e.g. Rees 2013; Hickson 2022). Hinting at this in landscape images interspersed with his portraiture, Di Principe captures the vast scale and often surreal quality of the Marshes themselves (Figure 3, left), where gangs of crows lurk on goalposts awaiting leftovers. These images suggest resonances broader than football, not least of all the status of this place as a green space and habitat in an otherwise dense urban environment. The gaining of this ground was thus also the gaining of new communities, new relationships and new heritage, a remarkable turnaround for what was once piles of broken bricks and concrete.

**Rubble: Forgetting and Remembering the Blitz**

On both Hackney and Leyton marshes, the millions of tons of rubble are surprisingly hard to find; almost all of it lies buried under grass, shrubs and trees. That said, walkover survey does reveal a few sparse fragments. For example, at the northern edge of Leyton Marsh, the movement of people and animals has created rough paths over the slope, with topsoil eroded to reveal fragments of concrete, broken glass, granite setts and yellow London stock bricks (Figure 4, left). At Hackney Marsh the rubble is even harder to see. Some large (up to ca. 0.8 m-wide) fragments of concrete are glimpsed on the River Lea’s western banks, just below the water’s surface, having seemingly tumbled from the top of the slope during dumping (Figure 4, right). More often, the hidden mass manifests itself by proxy: around the southern fringe of the Main Marsh, the steepness of the buried rubble slope is such that several staircases have been built to facilitate the climb from the riverbank up to the football pitches (Figure 5). A walk across the area is therefore also one up, and over, a topography created from the remnants of thousands of buildings. This simultaneous material presence and absence of the rubble points to a further consequence of the reclamation: as a place of remembrance and forgetting for the Blitz itself.

The relative hiddenness of the rubble, along with the lush plant life and the vast scale of both sites, tends to make both marshes appear almost “natural”, and it would seem

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10. None of this is diagnostic enough to indicate the types of buildings it came from in anything but general terms.
FIGURE 4. Top: fragments of London stock brick and a damaged granite sett on the surface of Leyton Marsh (10 cm scale). Bottom: Large (ca. 0.8 m length max.) fragments of concrete have tumbled from the dumped rubble on Hackney Marsh on the west bank of the River Lea, near Friends Bridge (photographs by Jonathan Gardner, CC BY-NC 4.0).
few Londoners are aware of their history. On an interpretation board near Leyton Marsh, there is a single sentence referring to the rubble, but the origins of both marshes remains otherwise unmarked. Even armed with the knowledge of how the land was reclaimed, it is still difficult to conceptualise that this ground was gained as an indirect consequence of such an enormous loss of life, housing and workplaces. Unlike a battlefield, these marshes are places produced as a by-product of violence, alienated and dislocated from the mechanisms of their production – the incendiaries, high explosive bombs, parachute mines and rockets, and the salvage and demolition crews that followed. ¹¹

No records survive of where the individual loads of rubble came from; the fill of the marshes mainly comprises millions of cubic metres of broken concrete, stone and brick waste, mixing the traces of many places, buildings and lives. Nonetheless, one need only stray slightly from the marshes, to visit the surrounding neighbourhoods of Leyton and Clapton, to see where this waste could have come from. Here the streets are punctuated by bombsites where homes were destroyed or “damaged beyond repair” (Figure 6, using the labelling of the Bomb Maps – see Saunders and Woolven 2005). Almost all that was bombed has now been replaced by newer buildings. In some places, gaps remain where new roads and parks were built, while on other sites, the broken ends of terraced housing are propped up by brick and concrete buttresses and rendered. Each site, whether rebuilt or left empty, effectively acted as a “mine” or “quarry” for the raw material that went into the reclaimed land. Unlike the well-known rhetorical power of “the Blitz” as a collective trauma (Calder 1992; Johnson-Schlee 2021) and its associated “Blitz spirit” as a symbol of the resilience of the British (or more often, the English) against overwhelming odds – invoked in everything from football to Brexit – such material traces of the Blitz itself are rarely heritagised or even acknowledged.

In the immediate post-war period some limited efforts were made to create physical memorials to the bombing – for instance, through partially realised plans for the preservation of bombed-out churches (Pohlad 2010; Larkham 2019). Unlike monuments and memorials to World War I, such commemorations that did appear in London were nonetheless often piecemeal and incoherent (Moshenska 2010; Larkham 2019). In this light, it is interesting to think about how both the process of filling the marshes and the rubble itself can be seen as a form of Blitz remembrance, or even a “counter monument” (Young 1992; Moshenska 2009; Lewis 2017).

At first glance, the agglomeration and seeming homogeneity of the rubble would seem to disqualify its ability to mark the conflict. Along similar lines, Helmut Puff, discussing the far-more heavily bombed German cities, suggests that,

[r]ubble is material without significance; it is matter destined to be removed. By contrast the terms “ruins” evokes traditions, visual codes, and a wealth of significations. (Puff 2010, 253–254)

¹¹. This material was extensively sorted prior to deposition on the marshes and other dumps, with personal belongings, furniture, useable timber, metal and (on occasion) complete bricks, salvaged prior to dumping under wartime regulations (National Archives: HO 186/2006 – Damage: Reconstruction and Salvage: Salvage Information Bulletins).
FIGURE 5. Steps built to enable access up the edge of the dumped bomb rubble from the riverbank to the level of the football pitches south of Main Marsh (photograph by Jonathan Gardner, CC BY-NC 4.0).
However, as I have argued elsewhere (Gardner 2022, 219–222), rubble is both versatile and generative – physically and conceptually – and rarely so insignificant as it might seem (see also Gordillo 2014). In this regard, Shannon Dawdy notes that the “taphonomy” of dealing with rubble and waste produced by conflict or disasters (in her work, Hurricane Katrina) is not only materially and geologically constituted, but also inherently socially and politically layered. Thus, the reuse of rubble in dumping can act as a “medium through which individuals and communities reconstitute themselves” and affords a variety of opportunities for rebuilding societies after catastrophe (Dawdy 2006, 720).

Returning to the marshes; though bomb rubble dumping did not produce a war memorial or leave a romantic ruin, this filling can thus also be read as a form of social

![Figure 6: Outline map showing Leyton and Hackney marshes in context with all buildings that were marked either “damaged beyond repair” (purple) or “totally destroyed” (black) on the LCC Bomb Damage maps, or inferred from gap sites on post-war maps in the nearby Essex borough of Leyton (red stippled), within an arbitrary 1 mile radius of the centre of each marsh. Polygons drawn by the author, derived from LCC bomb map data reproduced by Saunders and Woolven (2005) (waterway polygons derived from OS OpenMap Local; contains OS data © Crown copyright and database right 2023. Open Government Licence 3.0. Inferred Leyton bomb sites derived from Ordnance Survey mapping © Crown Copyright and Landmark Information Group Limited [2023]. All rights reserved [1936–1956]).](image-url)
reclamation after the trauma of the Blitz. This spatial-social layering was recognised by the print media of the era as a future-oriented and a productive manifestation of London’s resilience and rebirth, as shown by a quote from Lord Latham, leader of the LCC, in *The Listener*:

> Many thousands of tons of this [rubble] are being dumped on the London County Council’s open space at Hackney Marsh to raise the level and thus prevent it from being flooded at times, so, that the Battle of London has helped to win a new playing field for future generations of Londoners.

(Latham 1942, 199)

An editorial in *The Times* later referred to

>[…] raising the level near the River Lea for the purpose of providing a large area free from flooding as an open space for the enjoyment and recreation of the people in the district. (*The Times* 1946)

Despite this predominant focus on rebuilding for the future, the idea of a more overt memorial function for the rubble also emerged in at least two contemporary suggestions. In May 1945, a letter written to Latham proposed that a new leisure complex including a swimming lido should be built on the marshes’ rubble, as a recognition that

> this field now contains within it thousands upon thousands of what was [sic] once people’s homes. It [the leisure complex] would be a fitting tribute and memorial of the sacrifices made.¹²

More philosophically, David Low (better known as a cartoonist) described in *The Listener* how “London buries her past” in the rubble dumped in vast pits in the city’s parks (Low 1941, 227). While cautiously optimistic – the article was entitled “No Mourning, By Request” – Low nonetheless poetically described the dumping as a heart-wrenching, yet necessary, obliviation of the past through burial:

> Already the heaps sliding down the sides mount high. They will fill the pits, the grass will grow, and future generations will tread the level walks again, unthinking of, perhaps unknowing, the history below – churches, blocks of flats, hotels, hospitals, town halls, shops, historical shrines, monuments, cinemas, smart town houses, Georgian mansions, respectable suburban villas, and the poor slums that here find a common grave. What a theme for poets to come! Alas, poor Yorick!

Low’s last sentences once again hint at the creativity inherent in rubble as well as its destructive origins – “the negativity of rubble as [nonetheless] a generative, affirmative force” (Gordillo 2018, 125). Indeed, Low articulates that “our war memorial this time will have to be to the Dead Past”, and suggests that a rubble hill in Hyde Park would provide

> the ideal site for it. I should take off my hat when I went by. There was much that was good about it all – although there was also much that had

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been dead for years but didn’t know it. And there is always the comforting reflection that whatever has crumbled and gone for ever it is certainly not our soul. (Low 1941, 228)

Here it is productive to consider Low’s evocation of people “unthinking of, perhaps unknowing, the history below”, as they traverse new landscapes like the marshes, in light of Denizen’s aforementioned suggestion that the city and the ground upon which it is built are “mirror images of one another” (Denizen 2013, 41). In both cases, there would seem to be a forgetting or ignoring of the waste of the city’s demolitions, yet there remains an acknowledgment of such material’s physical and social affordances as a whole: offering both new land and a means to recognise traces of a now-lost past. Thus, in this sense remembrance of the dumped rubble of the marshes is not a fixed lieu de memoire but a potentially more radical, dialectical, landscape where the past does not remain “passed” and forever entombed or forgotten.

A corollary to this recognition as potential memorial or counter monument is necessary given how, as I noted above, I was limited to surface survey. How would such a recognition of this waste stand up to actual excavation? What might we achieve by digging deeper into this material (ignoring issues of permission and contamination for now)? While it would be difficult, if not impossible, to identify individual buildings or episodes of deposition, I would suggest that the act of excavation would be socially significant in itself.

In encountering broken and burnt remnants of London’s buildings on such a dig, we would be forced to encounter (sometimes literally) concrete evidence of how these now green fields are ultimately “monstrous” by-products of the struggle against fascism (sensu González-Ruibal 2019) and to reflect on the experience of those who lived through this. Such work has precedent in London. The Museum of London’s 2005 excavation of a bombed street buried under today’s Shoreditch Park was arguably valuable less for the conventional archaeological discoveries it made (i.e. artefacts, chronologies etc.), but rather for how it presented the testimony of elderly survivors of the bombing and the physical evidence in engagement with younger generations from nearby communities (Moshenska 2009; Simpson 2011). Moshenska (2010, 7) has argued elsewhere that the material remnants of wartime bombing, whether rubble or scraps of shrapnel (or even unexploded bombs) offer an alternative potential means for remembering the Blitz in a way that focuses on local places and events rather than formal monuments and ceremonies. Thus, the rubble of Hackney and Leyton marshes could similarly act as a form of remembrance if made visible once again through excavation. Indeed, I would argue that this mass of rubble is potentially far more agentive than any ruin or singular museum artefact and, as we will now see, remains more than capable of coming back to life.

13. This rubble was on the site of the Great Exhibition of 1851 and is discussed further elsewhere (Gardner 2022, 70–73).
14. Though as previously mentioned in note 1, Emma Marsh achieved some success in this regard with Blitz rubble on Crosby Beach, e.g. https://twitter.com/ArchaeoBeach/status/1128010264589275136.
Rubble as revenant

In the run-up to the London Olympic and Paralympic Games in 2012, the Olympic Delivery Authority (ODA) controversially constructed a temporary basketball training arena in the centre of Leyton Marsh. This contained two courts, though these appeared rarely used during the Games, with one – unverified – rumour suggesting the building was actually a back-up mortuary to be used in the event of a terrorist attack. Despite the ODA’s planning documentation asserting that the base of the building would not penetrate the topsoil (ODA 2011, 9), construction resulted in bomb rubble up to 0.5 m deep being excavated by machine. This was then piled up around the site’s edges and left uncovered, with construction generating protest from local people and others, including a campaign group called “Save Leyton Marsh” (still operating today as “Save Lea Marshes”). This concern arose for several reasons.

Firstly, Leyton Marsh is classified as Metropolitan Open Land and, as such, is supposed to be protected from any construction. Secondly, testing showed that the exposed rubble contained chrysotile asbestos, and, potentially, other chemical hazards that could contaminate the Marsh (SLM 2012). A third major concern was the loss of green space, and, in particular, the wild flowers and plants growing here. Ultimately, attempts to stop the building proved unsuccessful and the finished facility was erected in time for the Games and then taken down in the autumn of 2012.

In reinstating the marsh after the courts were dismantled, the Olympic Delivery Authority is alleged to have used standard rye grass and not the “promised variety” of wildflower and other plant species lost in the construction (Coram 2014, 3). At the time, a member of SLM, Celia Coram, noted that “[n]inety eight per cent of [wild] grasslands in Britain have been lost since WW2. We must leave some green space for all our futures” (Coram 2014, 3). Thus another emergent property of both marshes is how they have come to be so strongly valued as a space of nature, despite their original artifice, and how, for SLM and others, they can be seen to represent the need for better preservation of natural heritage in the UK more generally.

Around the same time as the basketball court controversy, the wisdom of the original filling of both Hackney and Leyton marshes was itself called into question. In a 2011 article headlined “Dig Up Hackney Marshes to Save Lives from Floods”, the Evening Standard related that Hackney Council had commissioned consultants to prepare a flood risk assessment for the Lower Lea (Bloomfield 2011). This found that Hackney Wick (southwest of Hackney Marsh) was at risk of severe flooding, with up to two metres of water predicted if the Lea and Lea Navigation burst their banks. Flood defences built in the twentieth century were deemed inadequate in the face of greatly increased rainfall resulting from climate change and building on the floodplain higher in the catchment (Scott Wilson Ltd 2010).

The suggested solution was that some of the rubble-raised area of Hackney Marsh should be reduced to partially restore its original role as floodplain. Given the area at risk of flooding was ca. 100,000 sq m, the report authors suggested excavating a 70,000 sq m flood storage strip out of the bomb rubble, at a cost of £6 million. This would substantially lower the flood risk for housing in the vicinity but would obviously reduce
the useable area of Hackney Marsh for leisure uses. Since the report, little action has been taken to mitigate the situation, while extensive development has taken place in Hackney Wick. Thus, it was unsurprising that, on 25 July, 2021, extremely heavy rain led to flash flooding of around 0.3 m in Hackney Wick and caused severe damage to ground-floor and basement properties (Shankleman 2022).

Both episodes – the construction on Leyton Marsh and the threat of flooding – hint at how this waste rubble is conceptually and spatially flexible. While the erection of the basketball courts did damage Leyton Marsh and the rubble was indeed toxic, it was these materials that actually created the much-loved landscape itself, and thus, by extension, spurred the formation of the Save Leyton Marsh campaign, whose members continue to fight to preserve greenspaces in the area today. Likewise, it is a curious irony that while efforts to create dry land for leisure in the 1940s contributed to increased risk of flooding today, it is the dumped material itself that offers a potential solution in its proposed sacrificial re-excavation. These episodes remind us that waste material and waste landscapes are more than capable of returning to us even from a seemingly-permanent buried “afterlife”. Furthermore, in such episodes of revenance, waste materials and sites resist straightforward categorisation as “wasted” or valued, ally or threat, dangerous or safe, or, indeed, “natural” or “artificial”.

**Discussion**

In examining the filling of the two marshes with waste bomb rubble, we have seen how such reclamations do not only make “new” land, but also new valuations and uses. At Hackney Marsh, the dumping of rubble to create leisure spaces led to the formation of a community of footballers, and valuation of the site as a place of sporting heritage. Both marshes also act as a material trace of World War II and contain potential for remembrance of the Blitz. With the recent re-emergence of the rubble in a curiously dualistic afterlife, both sites transform once again, this time into landscapes fraught with threat and contestation but also holding the potential for redemption and restoration. Though this paper has presented just one example of a waste-based land reclamation, such emergent effects suggest significant implications for the creation and use of artificial terrain more broadly.

Firstly, it is clear that waste-led reclamations should be recognised as a distinctive form of artificial ground and as a well-defined layer of the archaeosphere (Edgeworth 2023, this issue). The dumping of waste to create new terrain from a specific, time-limited event of waste production (in this case, the Blitz and subsequent demolitions) produces a distinct taphonomic and temporal signature comparable to other cities in the UK and elsewhere (see also Terrington et al. 2018, 33). Despite being hidden beneath a layer of greenery, the rubble is therefore an especially clear marker of anthropogenic change to the Earth’s geological strata and one that has a distinctly social taphonomy (sensu Dawdy 2006). The proposed re-excavation of the marshes for flood prevention would indicate that land gained from waste remains an open deposit, subject to ongoing transformation; as Edgeworth notes, the archaeosphere is never complete (Edgeworth 2014, 105).

This brings me to a second point, about how far this ongoing taphonomic process is conceptualised or valued by users of such spaces. In discussing the archaeology
of garbage dumps, Atif Nativ has suggested that after we bury waste material it can logically no longer be called waste at all, given that such a term implies a human value judgement and that, when

> buried below the surface, [waste materials and objects] are entirely disengaged from the valuing and designating social sphere. Socially speaking, they do not exist as individual and discrete entities but only as an undifferentiated composite. (Nativ 2022, 76)

Nativ’s broader argument – that we are only capable of engaging with landfill’s surfaces, and only a totality of agglomerated waste, rather than its now-buried, individual, fragments – raises provocative questions for how waste-based land reclamations are understood. For example, as a material trace of the Blitz, the rubble of the marshes would, at first glance, seem to be rarely ever directly engaged with by the users of Hackney and Leyton marshes; instead, it is simply unseen, there below, unknown by most, a substrate for other things to happen on and above. Furthermore, the rubble functions as a single mass; we cannot discern individual buildings (let alone who lived in them), and, even where it emerges, its remains are partial, jumbled and barely diagnostic. However, diverging from Nativ here, this subsurface is ultimately socially essential for its aboveground uses. The rubble is in actuality a social actor par excellence; without it, none of the activities I have described, from football to protests (or this paper), are likely to have taken place in the same way.

Thus, when this waste was cleared from the bomb sites of the East End, it was indeed conceptually transformed when compacted into the marshes. Crucially, however, its burial did not remove it from the social; rather, this sublation only served to give it an afterlife – or perhaps, a second life – no longer characterised by its destructive origins, but instead acting as a generative co-constituent underpinning the social terrain upon which life continues here. As the planet grows ever more urbanised and the archaeosphere reaches ever greater extents, more of us will inhabit land that is, at least in part, artificially constituted through reclamation or infilling. If, as Denizen has suggested, the “soil and the city” are indeed “mirror images”, then, as a material capable of both shaping and being shaped by our urban lives, waste provides a unique means to reflect upon how we define, create and reimagine value in cities, past, present and future.

Acknowledgments

I wish to thank all the participants in our 2022 Society for American Archaeology Annual Meeting session from which this paper and special issue emerged. Many thanks to Beatriz de Groot, Gabriel Moshenska and my fellow editors, Jeff Benjamin and Matt Edgeworth, for their helpful comments. Thanks also to the two peer reviewers for their useful suggestions.

This article is an output of Reimagining British Waste Landscapes, funded by The Leverhulme Trust and Edinburgh College of Art, University of Edinburgh (ECF-2020-173).
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