RESEARCH ARTICLE

New Light on an Old Problem: Child-Related Archaeological Finds and the Impact of the Radburn-Type Council Estate Plan

Carenza Lewis
University of Lincoln, UK
clewis@lincoln.ac.uk

Ian Waites
University of Lincoln, UK
iwaites@lincoln.ac.uk

Abstract

This paper uses new data from archaeological excavations to explore the effectiveness of the "Radburn" layout used in many post-war social housing estates in the UK, the name referring to a design modelled on Radburn in New Jersey in the United States. Their design aimed to provide healthy living environments for less-affluent families by fronting homes onto communal pedestrianized "greens", enabling people to circulate and children to "play out" safely near their homes. However, many Radburn estates are now socially deprived and explanations for this have included suggestions that the Radburn plan was inappropriate to the wants and needs of resident families.

Analysis of 20 small archaeological excavations carried out in 2016 by residents of a Radburn-type council estate in Lincolnshire recovered lost aspects of its heritage, including a large number of child-related items from sites on the communal greens. This

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suggests that the greens were indeed used as intended for children's play, undermining suggestions that inappropriate design was a significant factor in the decline of estates such as this.

Introduction

In post-war Britain, an innovative planning method inspired by the "garden city" movement and modelled on Radburn in New Jersey in the United States was used to lay out many of the new housing estates which proliferated across the country, as councils replaced inadequate and war-damaged homes in the 1950s and 60s. It was hoped that spacious, pedestrianized communal layouts would nurture healthy communities by providing spaces for safe movement and outdoor socialization by children away from traffic. But many of these estates have since become deprived and disadvantaged, and one suggested factor in this has been the Radburn plan itself, with some scholars suggesting that residents struggled to connect with the communal nature of the greens. While many conflicting opinions have been voiced, there is little "hard" evidence to either substantiate or refute these arguments; meanwhile, the estates continue to be viewed and critiqued pejoratively, as do social housing estates more generally.

In 2016 *Exploring Middlefield's Utopia* involved residents of a Radburn-type estate in Gainsborough, Lincolnshire in community archaeological excavations with two overarching aims: to see what archaeological excavations could reveal about the development of the estate, and to explore the social impact of involving local residents in community archaeology investigating their own estate. This paper focuses on the first of these aims, with those related to the social aims to be published elsewhere (Lewis and Waites in prep.). Here, we analyse finds from the excavation to show that children did use the Radburn-type communal greens for play, and discuss the significance of this for our understanding of the value of Radburn-type post-war council estates.

Background

The Rise of Council Estates and Radburn Planning in Britain

The 1945 general election in Britain resulted in a landslide for the Labour Party, delivering a large enough majority to introduce a programme of far-reaching social reforms and reconstruction that came to be collectively known as the "Welfare State". A key feature of this was an aim of tackling the country's severe post-war housing shortages. As World War II was drawing to a close, it was predicted that Britain would need up to four million new houses to replace those destroyed or damaged during the war or simply deemed unfit for habitation by modern standards; by 1951 it was estimated that up to eight million new homes were needed (Grindrod 2014, 22). As a consequence of the post-war "belief in the possibility of effecting social and cultural improvement through raised material living standards" (Ravetz 2001, 237), central government aspired to meet this need not only by encouraging private house building but also by increasing the stock of good quality, local authority-owned homes for rent by less affluent families. Unbelievable as this may seem today, in the more optimistic, confident post-war era

FIGURE 1: Housing in the post-war new town of East Kilbride, Lanarkshire, showing the characteristic Radburn-type layout with houses fronting onto pedestrianized communal grassed "greens" accessed by footpaths (© the authors).

this aspirational challenge was met by the construction between 1945 and 1969 of four million new homes for rent – 59% of all housing completed over that period (Glendinning and Muthesius 1994, 1). The speed with which the ongoing, urgent need for new rented homes was met meant that by the start of the 1980s, nearly half of Britain's population either lived, or had previously lived, in local authority-owned housing (Hills 2004, 14).

This urgency, combined with a desire to avoid the mistakes of the late eighteenth and the nineteenth centuries, which created densely packed and inadequately serviced slums, stimulated interest in new approaches to mass housing estate design that would provide healthier places for people to live. One such approach met these requirements by offering a model in which streets and houses were laid out so that the latter faced not onto roads but onto broad pedestrianized communal greens (Figure 1). This innovative layout was inspired by the garden city movement and had been pioneered in 1928 at Radburn in New Jersey, which was explicitly advertised in 1928 sales literature as "the town for the motor age" (Ravetz 2001, 103).

Use of the Radburn plan in Britain was first acknowledged in a 1949 government housing manual (Esher 1981, 46) and it began to be widely used and adapted by British architects working on local authority housing schemes from the early 1950s, for instance with the "Eastfield" development in Northampton and at Greenhill, Sheffield (Womersley 1954). By the early 1960s, numerous evaluations of new council estates in journals such as the *Architectural Review* were categorizing the layout of these developments as "Radburn schemes", notably at Haverhill in Suffolk, some newer parts of Basildon and Harlow New Town and at Willenhall Wood, Coventry (1960–1961). A 1961 *Architectural Review* feature, entitled "Over and Under – A Survey of Problems of Pedestrian and Vehicle Segregation", noted the importance of the Radburn system for "providing open spaces which people can really use [… making] life safer for the pedestrian and car parking and garaging easier" (Blachnicki and Browne 1961, 323). By 1964, when it was being envisaged that

personal car use would rapidly increase over the decade, another *Architectural Review* feature was calling for "the logical extension of the Radburn principle […] to apply it to bigger areas and units" (Spurrier 1964, 355). This "extension of the Radburn principle" had clearly reached Lincolnshire by May 1964, when the layout of the Middlefield Lane estate in Gainsborough, the subject of this paper, was influenced by the use of Radburn on the Willenhall Wood estate in Coventry (Waites 2015, 274). Exact numbers of post-war British council estates that used Radburn principles in the design of their layout have yet to be fully determined, but preliminary research carried out for this paper suggests that Radburn did indeed become the go-to planning model for most council estates built between 1964 and 1979. In March 1979 for instance, an *Architectural Review* feature on a new local authority housing scheme at East Hanningfield, Essex, noted that its layout was a "conventional and well-tried […] variant of Radburn planning". Radburn was seen to meet planners' aims of creating places which could nurture social cohesion and personal wellbeing within the constructs of family and community, at a time when it was anticipated that personal car use would rapidly increase. In effect a "garden city plus motor car" (Ravetz 2001, 103), Radburn-type estates were designed to provide dual but otherwise quite separate circulation systems for cars (via limited access roads with short cul de sacs leading to parking at the back of houses) and pedestrians (via extensive networks of footpaths across open, public green spaces at the front). Fronting houses onto pedestrianized grassed "greens" rather than streets minimized the car's intrusion into the community's outdoor space, which was primarily intended to provide a safe, spacious, healthy environment where children could play communally within easy sight of carers at home, and people of all ages could socialize and move around between the homes, shops, schools and community centres that were all integral elements of Radburn estates. These low-density estates required large areas of land and this demand was typically met by building on undeveloped "greenfield" locations on the edges of existing towns and cities. Using these peripheral locations also met the aims of moving people away from overcrowded and often insanitary urban centres.

The Decline of Council Estates

Since the 1970s the social and cultural optimism which drove the post-war proliferation of council estates has faded, and in successive decades such estates have frequently been denigrated as unprepossessing places in which to live, with high levels of physical decay and social deprivation. The causes of this decline have been hotly debated in the context of wider considerations of national housing provision, social policy and the sociological impact council estates have had upon society in general (e.g. Dunleavy 1981; Somerville and Sprigings 2005; Mullins and Murie 2006; Hanley 2007). Critiques of the social impact of council estates can be traced back to the immediate post-war years themselves, most notably from Young and Willmott, whose famous 1957 study of working-class Bethnal Green in London's East End, *Family and Kinship in East London*, argued that the provision of a new estate for this community weakened its social fabric because it destroyed established community bonds. Moving to the new estate created a social shift from "a people-centred to a house-centred existence", replacing "sociable

squash [… with …] drawn-out roads and spacious open ground" (Young and Willmott 1957, 127 and 98, respectively).

From the early 1980s other studies shifted towards a more critical stance, born out of new concerns with what were increasingly seen as "problem" estates. In 1983, the oral historian Tony Parker produced a study of individual lives on a council estate in Walworth, London entitled *The People of Providence: A Housing Estate and Some of Its Inhabitants* (Parker 1983). Using interviews with the estate's residents, Parker attempted to present a number of "snapshots" of life within the estate without comment, but his overriding aim to give voice to those considered to be on the margins of society actually served to reinforce an emergent belief that council estates were crucibles for poverty, restricted opportunities and low aspirations. In subsequent decades, such negative perceptions of council estates have become a familiar recurring trope, with populist social discourse representing communities blighted by dilapidated housing nurturing a "benefits culture", ignorance and "neighbours from hell", trends bemoaned by writers such as Owen Jones (2011) yet also exemplified by television series such as Channel 4's *Skint* (2013–2015), the first series of which put a pejorative spotlight on the everyday lives of the current residents of a 1960s council estate in Scunthorpe, Lincolnshire.

Design as a Factor in Council Estate Decline

One factor cited as responsible for the decline of social housing estates has been design. The study that particularly defined this idea was Alice Coleman's *Utopia on Trial* (1985). Coleman was a geographer whose work built on the "defensible space" theory proposed by the American architect and city planner Oscar Newman (1972). Put simply, Newman suggested that particular types of building and layout could induce either social or antisocial behaviour, and that the latter occurred when design played down any sense of personal space and ownership around the immediate surroundings of the home. Coleman applied this theory to her studies of what she identified as "social malaise" (such as litter, vandalism and graffiti) across a number of high-rise, high-density estates in the inner London boroughs of Southwark and Tower Hamlets and the Blackbird Leys estate in Oxford, arguing that the social decline of these estates came about because they were designed with shared spaces such as "deck-access" bridges, walkways and stairwells which blurred social boundaries between public and private, making it difficult for residents to control or regulate their environment.

The findings of *Utopia on Trial* were controversial, and Newman in particular later judged that he had paid insufficient attention to the social and economic conditions of the residents and how this might affect the physical condition of the estates such as those that Coleman surveyed (Heck 1987). Despite this, in 1986 Coleman's study attracted the attention of Prime Minister Margaret Thatcher and in 1991 the Conservative government under her successor John Major funded Coleman to make suggestions for the physical renewal of these estates as an attempt to reduce crime and vandalism (Towers and Turkington 2000, 115). As a consequence, Coleman's work encouraged a belief that flawed, misguided and outdated planning was compromising post-war council estates more widely.

Coleman's ideas were broadly echoed in what is still the most detailed social and cultural historical study of British council housing, Alison Ravetz's *Council Housing and Culture: The History of a Social Experiment* (2001). Ravetz traced the history of council housing from its origins in Victorian philanthropy and the garden city movement up to the deregulation and "right to buy" policies that transformed council housing provision so profoundly in the 1980s and 90s. While Ravetz is generally sympathetic towards the social and practical aims of welfare state council house provision, she is also unflinching in suggesting that these aims were almost fatally compromised not only by the complexities of state finance and local authority control but – again – by their architecture and planning, whose underpinning ideas she characterized as over-intellectualized and "utopian".

The Impact of Radburn Plans

The limited amount of research which has been conducted to date into council estate design has not tended to focus on low-rise, low-density Radburn-type developments. Despite the fact that only 20% of all council housing built between 1963 and 1967 was in tower blocks (Glendinning and Muthesius 1994, 2), it is the high-rise estate that has tended to receive most attention. Notably, in the sole architectural survey of council housing, Elain Harwood and Alan Powers (2008) devote only two chapters to smaller, provincial estates which are even then examined purely in terms of their vernacular features – for instance the quite lovely council houses designed by Herbert Tayler and David Green for Loddon District Council in Norfolk during the late 1940s. Elsewhere, Harwood and Powers concentrate on high-rise estates that are generally considered to be architecturally significant, such as the Alton Estate in Roehampton, London (1958–1959), famous for emulating the Modernist architectural ideas enshrined in Le Corbusier's seventeen-storey concrete block of the Unité d'Habitation in Marseilles (1945–1952).

In the relatively rare instances where Radburn planning has been specifically considered in historical thinking about Britain's post-war council estates, it has tended broadly to be treated with disdain. The open spaces characteristic of Radburn estates were criticized for being too spacious with their over-large expanses of greenery, long walks and "lavishly" wide road widths, where an "unhappy housewife" was in danger of being "marooned [on the] distant rim of their sentimental green landscapes […] cut off from the neighbourliness of closely built-up streets" (Richards 1953, 32) This somewhat curious concern with the prospect of there being too much "open" space for families moving onto these estates later became a component of the many criticisms relating to the design and planning of these Radburn estates. Coleman, for instance, continued to argue that that the "social malaise" she ascribed to the high-rise estate was also due to the "pernicious" communal pedestrianized spaces of the Radburn-type estate (Coleman 2009, 12).

By 1995 Radburn planning was being disdainfully labelled as the "council estate layout […] endlessly stamped over wide landscapes", while (more broadly) the utopian idea that physical layouts could in themselves cause a "raw estate to develop into a self-sustaining and vibrant community" was rejected as a fallacy (Ravetz and Turkington 1995, 36–37). Ravetz (2001, 103) criticized Radburn layouts as a "poor substitute for conventional streets", in which "[i]t was difficult to distinguish the backs from fronts of houses: in a conventional sense they had neither, and the ubiquitous footpaths effectively

deprived them of all privacy." The manner in which these estates were designed, she suggested, was but an "instrument of social reform" which was ultimately doomed to failure because it amounted to "cultural colonization [… asking] nothing more of tenants than to live in houses and to participate in estate life in ways approved by middle-class reformers" (Ravetz 2001, 5). By 2003, the prevailing negative perception of council estate planning was reflected by Chris Arnot writing in the *Guardian* newspaper about his visit to the Radburn-type estate of Tile Hill in Coventry:

> The grey, pebble dashed frontages of 1950s council houses are not improved by rain. […] In Coventry, as elsewhere, the mistakes of the post-war planners of public housing have long been derided – from the materials they used (too much concrete) to the scale they built on (too monolithic) and the places where they chose to build (too far from the middle of town).
>
> (Arnot 2003)

Thus the Radburn plan, so enthusiastically embraced as a salvation for less-affluent post-war communities, became viewed instead as contributing to their decline, with its distinctive pedestrianized layouts condemned as impersonal drivers of deprivation created by middle-class utopian planners ordering the lives of people whose needs they did not understand. However, little of this theorizing has been based on evidence regarding how Radburn greens were actually viewed or used by estate residents – because a lack of research into this question means that no such evidence exists. This is the context within which the *Exploring Middlefield's Utopia* project was devised and carried out.

The Middlefield Lane Project – Aims and Disciplinary Context

Aims

Exploring Middlefield's Utopia involved residents in planning and carrying out community archaeological excavations on multiple locations within one Radburn estate, Middlefield Lane in Gainsborough, Lincolnshire in order to investigate two aspects of the contemporary social phenomenon (Harrison and Schofield 2010, 1). One aim was to explore how archaeological finds could illuminate the development of a place not previously conceived of as having any sort of cultural history. The other was to explore the social impact of involving local residents in the participative search for these finds and connecting them with the history of their place.

These aims were elicited in response to the recognition firstly that (as discussed above) scholarly knowledge of how life was actually experienced on post-war local authority housing estates is almost entirely lacking (Waites 2015, 268–269), and secondly that community-centred excavations have a demonstrated capacity to improve wellbeing in volunteers (Nevell 2013; Lewis 2015; Sayer 2015; Reilly *et al*. 2018). The two aims of the Middlefield project were also connected by evidence suggesting that the positive impact of community archaeology projects is increased if participants know and appreciate the value of the work they are engaged in (Lewis 2014, 315–317; Kiddey 2018) and the discoveries they make are able to enhance their sense of place (De Nardi 2014; Lewis 2015; Jones 2017).

This paper focuses on the first of these aims, analysing the archaeological evidence for the development and use of the Middlefield Lane estate, with an analysis of the social impact of the participatory experience on volunteers published separately (Lewis and Waites in prep.).

Twentieth-Century Council Estates and Archaeology

In employing archaeological excavation, *Exploring Middlefield's Utopia* took up the challenge implicit in Rodney Harrison's argument regarding the capacity of archaeology to contribute to the study of the post-war welfare state in Britain:

> [An] archaeological approach to the material world of public housing has the potential to reveal not only the ways in which changing state ideologies are expressed through their design, but also the ways in which individuals have (and continue to) engage with their spaces and material culture to manage the conditions of everyday life.
>
> (Harrison 2009, 259)

Harrison's 2009 work explored the significance of surface stylistic modifications made by residents to their homes on a number of (again) high-rise estates after local authority control and regulation were relaxed in the final years of the twentieth century. His interest in material culture is reflected in another study of contemporary social housing, Buchli and Lucas's analysis of the interior of an abandoned council house, which included the former tenants' clothing, furnishings and personal items. This reconstructed a bleak scenario of addiction, family breakdown and pain, raising uncomfortable ethical questions and potentially reinforcing pejorative narratives of council estate deprivation and decay (2000, 2001, 158–167).

There is now a growing interest in the archaeological study of twentieth-century social housing, but to date most work has focused on upstanding features and above-ground evidence, reflected in overviews and in-depth studies alike (e.g. Penrose 2007; Harrison and Schofield 2010; Dwyer 2015). In contrast, in the Middlefield project we used sub-surface archaeological excavation, an innovative approach for this subject: few archaeological excavations have taken place within council estates, and those that have, even when they have community engagement as a key aim, have focused on more conventionally "authorized" heritage sites rather than the estate itself. The CAER (Caerau and Ely Rediscovering) Heritage Project in Ely near Cardiff (Davis *et al*. 2014; Wyatt 2016), for example, has excavated the Iron Age hillfort of Caerau (Davis and Sharples 2015) and deserted medieval village of Michaelston (Davis 2017), both immediately adjacent to one of the largest social housing estates in Wales, but not (to date) the twentieth-century estate itself. In Manchester, community excavations adjacent to large twentieth-century housing estates around Moston focused on the former sites of a hall, a mill, a moated site and nineteenth-century agricultural buildings (Nevell 2013), while in Sheffield community excavations in Firth Park surrounded by large housing estates explored the former site of an Edwardian bandstand (Department of Archaeology, Sheffield University 2017). The few excavations that have explored recent non-elite domestic housing, such as at Hungate in York (Rimmer 2011) and Shoreditch Park in

London (Simpson 2012) or (further afield) Felton in Michigan (Baxter 2004) and Ludlow in Colorado (Larkin and McGuire 2009), have focused on the later nineteenth to earlier twentieth centuries, not the later twentieth century.

Exploring Middlefield's Utopia was hence innovative in two respects: as a study of post-war social housing, it used data from excavation; and as an archaeological excavation, it focused on post-war social housing.

Geography, History and Archaeology of the Middlefield Lane Estate and its Environs

History of the Middlefield Lane Estate and its Environs

Middlefield Lane lies in Gainsborough, which is on the east bank of the River Trent 24 km northwest of Lincoln in the administrative district of West Lindsey, Lincolnshire. First documented in 1013 CE (Cameron 1998) and briefly a high-status defended site, Anglo-Saxon Gainsborough was overshadowed by nearby Torksey, but from the twelfth century the tables turned and Gainsborough acquired a castle, market and a fair (Beckett 1988). Its strategic position on the River Trent drew the town into the English Civil War in 1643 (Beckwith 1972), but also underpinned its prosperity as a port. By 1750 Gainsborough's population exceeded 3000 (Beckett 1988, 132) and with the founding of the Britannia Iron Works in 1842 (Clark 1998), soared above 8000 by 1851. To house this most recent population growth, rows of cottages known as "Yards" or "Rows" (such as Barnaby's Yard and Popplewell's Row) were squeezed into plots behind already-cramped terraced streets.

From c. 1900 however, Gainsborough's population flatlined, its economy damaged firstly by railways which reduced river-borne traffic and from the 1930s by the decline of manufacturing. Notwithstanding, the footprint of the town grew in the mid-twentieth century. Popplewell's Row was one of several streets demolished in 1964 as part of an initiative described by the town's MP, Marcus Kimball, as "the drive against the slums, to house people in decent homes" (Waites 2015, 264). The inhabitants were to be re-housed on a new local authority-built "greenfield" housing development planned for the southeastern periphery of the town: the Middlefield Lane estate. The *Gainsborough Evening News* reported on 9 July, 1963 that this was to comprise some 380 homes, a parade of shops and a community centre, all to be built in just 21 months. Middlefield Lane's first residents moved into their new homes in the spring of 1964, and the estate as a whole was completed as planned in the summer of 1965. Since then it has remained largely unchanged, bar the replacement of The Precinct community and shopping centre with shared-ownership housing in the early twenty-first century (Waites 2018, 125–126).

In the early 1980s Gainsborough mirrored much of the UK by going into severe economic decline after its two long-established main employers, the engineering firms Marshall and Sons Ltd and Rose Brothers Ltd, both closed causing massive redundancies. In the second decade of the twenty-first century, the electoral ward within which the Middlefield Lane estate sits (Gainsborough East) is ranked high for levels of multiple deprivation in England (West Lindsey District Council 2019). Gainsborough's local authority, like many others across the UK, has passed overall responsibility for its

housing stock to a private housing association. Accordingly, the term "social housing" has come to replace the now less accurate "council housing", although the principle of providing people with a rented home cheaper than privately rented housing, and which usually provides a long-term tenancy giving renters the chance to put down roots, remains broadly the same as in the post-war years.

Geography of the Middlefield Lane Radburn Estate

Middlefield Lane lies c. 1 km southwest of Gainsborough town centre on elevated ground between 27 m and 32 m (Ordnance Datum) locally known as Uphills. Radburn principles are clearly evident in the Middlefield Lane estate (Figure 2), which is accessed by just two cul de sac access roads: one leading behind Dunstall Walk and Priory Close to a playground, and another, named The Drive, which leads to the back of what were the Precinct shops. Along The Drive, cars were largely kept to one side of the houses (or "round the back", as residents tended to put it) via short cul de sacs accessing garages and parking spaces. On the other side – "the front" – the houses were arranged along open green spaces (the areas named on Figure 2 as Priory Close, Upton Walk and so on) within a self-contained, interlinked public system of footpaths which made it unnecessary for pedestrians to walk on or across the access roads, giving residents almost complete seclusion from the car.

Archaeology of the Middlefield Lane Area

While the historic town centre of Gainsborough has seen some archaeological investigation, little known archaeological work has been carried out around the Middlefield Lane estate. Anglo-Saxon burials were allegedly found during the nineteenth century near The Walk,[1] but no details are recorded and their exact location is unknown. More recently, four archaeological investigations conducted in advance of development revealed nothing more than slight agricultural features and some summarily dismissed finds of nineteenth and twentieth century date (Rowlandson 2003; Allen 2007; Clay 2007; Tann 2010).[2] In the context of the aims and outcomes of *Exploring Middlefield's Utopia* it would, with hindsight, have been useful if more information about the twentieth century material had been provided in these reports.

1. These are logged by Historic England (NMR [National Monuments Record] SK 88 NW13) as three skeletons, "[p]ossible Anglo Saxon inhumations". According to the source used by Historic England (Meaney 1964, 155), they were found prior to 1875 in the "Cliff District" at Gainsborough. Each was lying "in a grooved stone and covered by another not grooved. The first stone was supported by 4 smallish ones". However, no supporting evidence is cited and the location is not given.
2. A curtailed watching brief in poor conditions in 2003 off Heapham Road c. 1 km east-southeast of Middlefield Lane (Rowlandson 2003) revealed no features beyond early modern or later land drains along with a single sherd of medieval pottery and an assemblage of unknown size of pottery of nineteenth or twentieth century date deemed likely to be night soil from Gainsborough (Rowlandson 2003, 3). In 2007 three trenches and a test pit excavated at the Beckett School c. 500 m northeast of the Middlefield Lane estate recorded "modern activity only" (Clay 2007). In 2007 a detailed documentary, aerial photographic and metal detector survey of land immediately north of Foxby Lane c. 650 m south-southeast of the Middlefield Lane estate revealed no evidence for activity other than agriculture and modern fly-tipping (Allen 2007, 10–12). In 2010 excavations in advance of the construction of William Harrison School on Middlefield Lane c. 600 m south-southwest of the Middlefield Lane estate in 2010 also revealed no premodern material (Tann 2010).

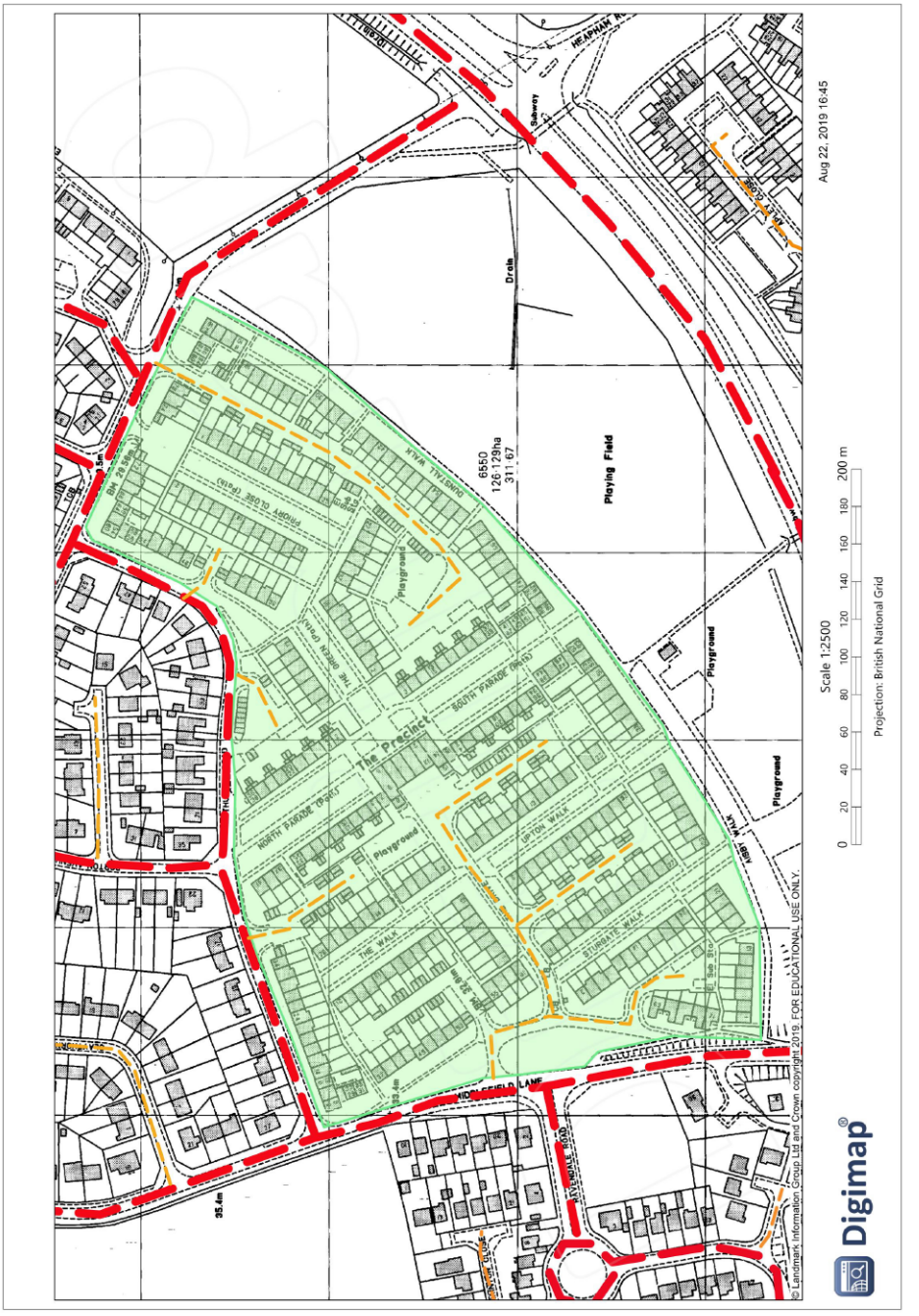

FIGURE 2: The Middlefield Lane estate (shaded green) in the 1980s showing houses fronting Radburn-style onto pedestrianized walks, closes and greens. Vehicular through-routes are indicated with bold red lines, cul-de-sac routes providing access to garages indicated with amber lines (Ordnance Survey details © Edina Digimap, annotations © the authors).

Methods

Exploring Middlefield's Utopia involved archaeological excavation of 1 sq m test pits by volunteers following a standardized methodology (Lewis 2007) also used elsewhere to excavate more than 2000 test pits in inhabited settlements across eastern England (Lewis 2019). This involves hand excavation in 10 cm spits recorded using *pro forma* booklets. Spoil is searched using a 10 mm mesh sieve and all anthropogenic items, however modern and apparently insignificant, are recorded and retained in the first instance. Following excavation, finds are weighed, identified and dated (if possible), listed and analysed in reports in which period-by-period mapping of commonly occurring, datable finds such as pottery allows the development of excavated places over time to be reconstructed (e.g. Lewis and Ranson 2011).

The Middlefield Lane test pits were excavated by local residents alongside and supported by professional archaeologists over two Friday-to-Saturday sessions (four days in total) in May 2016. This timing enabled local schoolchildren take part during the school day and people working during the week to participate on the Saturdays. In addition to 160+ infant schoolchildren, there were more than 60 local residents, working in teams of between two and ten per pit, some in family groups, others with neighbours or people they had met on the morning of the excavations. Some children worked on one pit throughout, others circulated between pits to compare progress and relay news. Most of the pits were sited on publicly accessible space, which allowed other people on the estate to get informally drawn into excavation or discussion. The project did not

FIGURE 3: An archaeological test pit on one of the Radburn-type communal pedestrianized greens on the Middlefield Lane estate under excavation by local residents (© authors).

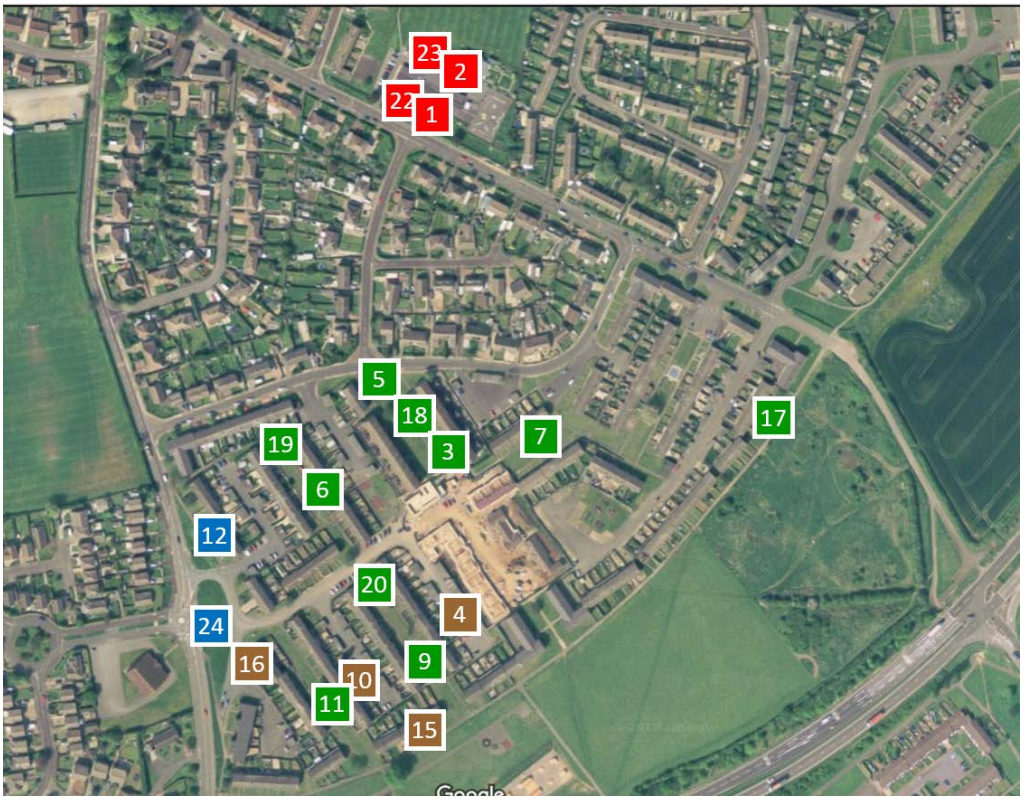

FIGURE 4: Aerial image of Middlefield Lane area showing test pit locations. Blue = non-pedestrianized greens alongside roads; brown = private enclosed gardens; green = pedestrianized Radburn greens; red = school grounds (aerial photograph © Google Earth, annotations © the authors).

extend to a formal oral historical survey, but, recognizing the value of contemporary perspectives (Isherwood 2013), the excavations and two subsequent workshops were filmed in order to record the archaeological activity and people's responses to it. The participating infant schoolchildren wrote about (or drew) what they'd enjoyed most while other residents completed paper survey forms to assess the social impact (Lewis and Waites in prep.). Subsequently, team members presented the results of the excavations in exhibitions in London, Lincoln and Gainsborough and on regional and national radio (Lewis and Waites in Holland 2017; Lewis and Waites 2018).

Archaeological Results

We excavated a total of 20 test pits across the Middlefield Lane estate (Figure 4). Ten were sited on unenclosed communal pedestrianized Radburn greens (numbers 3, 5, 6, 7, 9, 11, 17, 18, 19 and 20), four in enclosed private gardens (numbers 4, 10, 15 and 16), four in the grounds of the infant school serving the Middlefield Lane estate (numbers 1, 2, 22 and 23) and two on non-pedestrianized communal grassed areas near roads (numbers 12 and 16).

Details of the excavated deposits and finds summarized in Table 1 are recorded in the archive report (Parker and Lewis 2016). Most pits were excavated to a depth of c. 0.3 m,

TABLE 1: Summary excavation data including finds from the test pits around the Middlefield Lane estate, grouped by location type.

Test pit number	Depth excavated (m)	Finds likely to pre-date twentieth century					Finds likely to date to twentieth/twenty-first century							Notes
		C12–C16 pottery (n sherds)	C17/18 pottery (n sherds)	C19/20 pottery (n sherds)	Tobacco pipe (n pieces)	Animal bone (n pieces)	C20 pottery (n sherds)	C20 glass (n sherds)	C20 metal (n pieces)	Coins	Plastic (n pieces)	C20 CBM	C20 toy	Toy(s) type
Radburn greens														
3	0.35	3	33	5	38	14		5	6	1	5	11	4	marble x 3, plastic toy wheel
5	0.3		17	16	16	10	7	5			1	1	1	*Kinder Egg* toy container
6	0.35		12	12	18	10			5		14	33	1	*Smartie* tube top
7	0.27	1	20	11	16	12	1	5		1		6	1	large iridescent blue marble
9	0.33	1	4	4	4	2		4		1	4	7	1	marble
11	0.1		4	3	5	5		4	2			1	1	marble
17	0.48	3	14	14	35	11		2			3	1	*	
18	0.26	2	8	6	7	2		3			1	25		
19	0.28		9	4	12	1	1	5	1	2	5	11	3	marble x 2, 1 x plastic straw
20	0.45	2	12	15	14	11	1				2	9	1	plastic toy soldier fragment
Total	**3.17**	**12**	**133**	**90**	**165**	78	10	33	14	5	35	105	13	
Private gardens														
4	0.35		7		0	1	3		10		**5**	**25**	**1**	plastic soldier
10	0.5	**6**	**30**	**27**	**28**	**54**		16	22		23	18	1	plastic soldier
15	0.34	**4**	**6**	**32**	**12**	**1**	**2**	**9**			3		**2**	plastic cat, red plastic bead
16	0.16	**2**	**9**	**7**	5							1		
Total	**1.35**	**12**	**52**	**66**	**45**	**56**	**5**	**25**	**32**	**0**	**31**	**44**	**4**	
School grounds														
1	0.48	3	15	11	13	6		8			1	11	1	marble
2	0.55	3	18	9	11	5	2	1	4	1	2	1		
22	0.2	1	6	2	1			8	1		4	2		
23	0.2	1	9	3		2					2			
Total	**1.43**	**8**	**48**	**25**	**25**	**13**	**2**	17	5	1	9	14	1	
Non-pedestrianized greens alongside roads														
12	0.35	5	8	2	6	8					3	2		
24	0.36			17	1			53				1		
Total	**0.71**	**5**	**8**	**19**	**7**	**8**	**0**	**53**	**0**	0	3	3	0	
Total overall	6.66	37	241	200	242	155	17	128	51	6	78	166	18	

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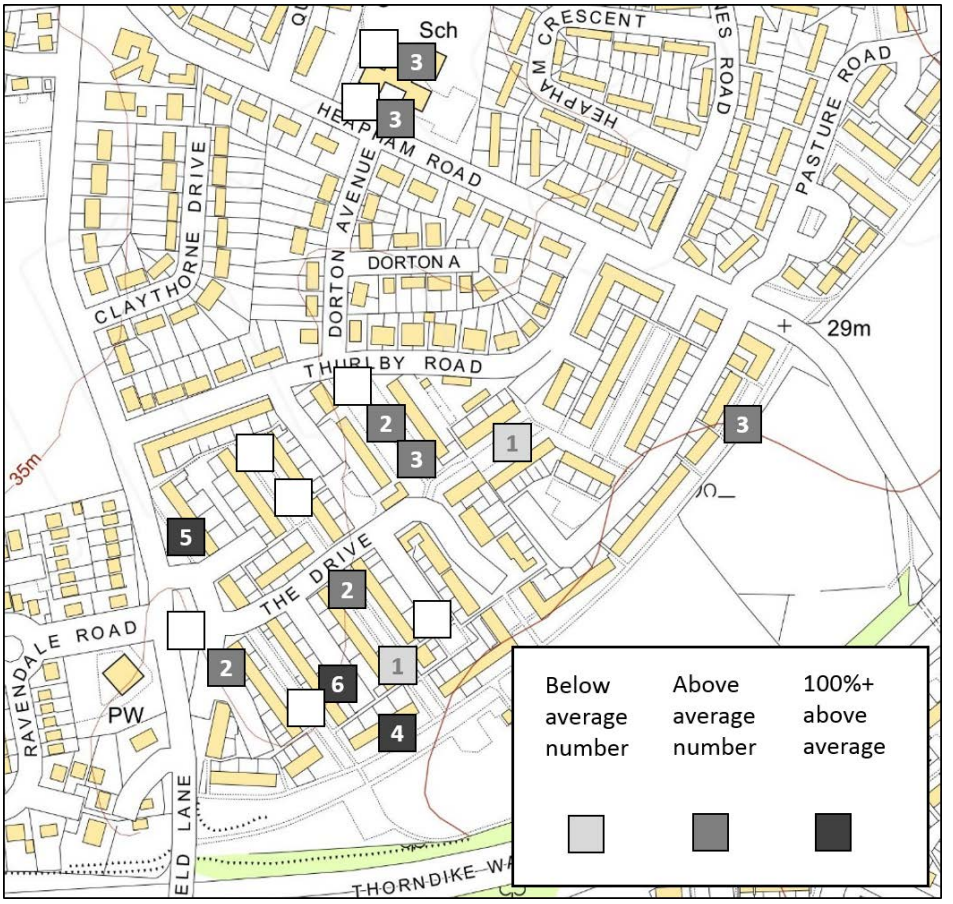

FIGURE 5: Distribution of medieval (twelfth- to early sixteenth-century) pottery from excavated test pits, with sherd numbers indicated within test pit squares (Ordnance Survey details © Edina Digimap, annotations © the authors).

with the deepest reaching 0.48 m and the shallowest 0.1 m. Overall, a total of 6.66 cu m was excavated. Finds ranged from sherds of medieval pottery to late-twentieth-century sweet wrappers and included ceramic vessels, clay tobacco pipe pieces, animal bone, glass, metal, coins and plastic and ceramic building material.

Premodern Use of the Middlefield Lane Landscape

A brief discussion of the premodern material is pertinent to this paper, as it shows how excavation carried out effectively at random can enrich the heritage of a twentieth-century site.

We recovered medieval pottery from all bar four pits (Figure 5), mostly small numbers of abraded sherds likely to have come from manured arable land. This correlates with the "Middlefield" place name (referring to the "middle field"), but it is possible that higher numbers of sherds from pits 10, 12 and 15 may indicate a lost medieval settlement. After

FIGURE 6: Distribution of seventeenth-century tobacco pipe from excavated test pits, with numbers of fragments indicated within test pit squares (Ordnance Survey details © Edina Digimap, annotations © the authors).

an apparent break in the later medieval period, continued arable use into the nineteenth and early twentieth centuries is reflected in pottery from all the pits.

One interesting disruption to this agrarian history was hinted at by an unexpectedly large number of seventeenth- and eighteenth-century finds (Figure 6*).* We initially suspected this material resulted from the spreading of night soil as fertilizer (Rowlandson 2003, 3). However, the extent of this practice in England has been questioned (Macfarlane 2002) and the Middlefield Lane ceramic assemblage was also unusual, with relatively few sherds of utilitarian redwares that typically dominate. Given that a siege and battle are documented to have taken place at an unknown site nearby in 1643 (Beckwith 1972; Allen 2007), it is plausible that the large number of fragments of tobacco pipes and drinking vessels may derive from a military encampment. Such *hors-de-combat* sites (if this is what this is) rarely feature in archaeological reports from Civil War sites, but a similar assemblage, linked to similar activity, has recently been noted at Peterborough Cathedral (Newman and Collins 2017, 66–67).

FIGURE 7: Finds from Test Pit 3, sited on the Radburn-type green of North Parade, during excavation (© the authors)

The Council Estate Era and the Use of Radburn Greens at Middlefield Lane

We recovered finds dating from the mid-twentieth century onwards from all pits (Figure 7), including items of plastic, metal, ceramic (including domestic crockery and building materials), glass and a total of six coins. Many of these finds were unidentifiable fragments of plastic and metal, but others such as a magnetic tape cassette were easily recognizable (by older participants, if not by some of the children!). Some finds could be closely dated, the earliest a 1974 ½ pence coin and the most recent a *Curly Wurly* chocolate bar wrapper with a "best before" date of 28 July, 1999. No finds could be categorically dated to the twenty-first century, although in many cases this latest date could not be excluded.

This assemblage might have been considered unremarkable coming from the site of a later twentieth century housing estate and, with notable exceptions (e.g. Simpson 2012; Kiddey 2018), such material has indeed routinely been ignored in archaeological excavation reports, including those around Middlefield Lane (see footnote 2 above). However, close analysis of the twentieth century material from the Middlefield Lane test pits proved remarkably illuminating.

A distinctive category of finds were items relatable to children, including toys such as glass marbles and plastic model figures (including a fireman and a cat) and other items such as children's sweet packaging (including a plastic *Smarties* cap and a *Kinder Egg* toy case) (Figure 8). We initially greeted such items with enthusiasm simply because they were immediately recognizable, fun and nostalgic, but as the number of such finds mounted, we began to suspect they might be more significant. This was confirmed when we compared the Middlefield Lane data with those from test pits excavated in

FIGURE 8: A sample of the child-related finds from the Middlefield Lane estate test pits (© the authors).

other inhabited settlements using the same methods (from which all anthropogenic items had also been recorded). This showed that the Middlefield test pits contained nearly four times as many child-related finds: village gardens produced, on average, one child-related find for every four pits excavated, while Middlefield Lane produced a total of 18 child-related finds from just 20 test pits. This might be expected from an estate designed to provide housing for families but it is taphonomically crucial: firstly, it demonstrates that children left an archaeologically observable trace on the estate, and secondly that this archaeological evidence accords with documentary evidence. The connection is reflected in residents' accounts, as one mused when asked what thoughts the dig provokes: "Memories, of everything, really. When someone finds it you can see what kind of life we had" (Pool 2016b, 01:56–02:07). This echoes the strong sense of connection evoked by children's material culture in other contemporary studies (e.g. May 2013; Martin 2014), which "links us to the past with an immediacy and a power often lacking in the written record" (Thomson 2013, 21).

The toys (or fragments thereof) which made up most of the "child-related" finds at Middlefield Lane were items that that were widely used for play in the UK in the later twentieth century (as indeed in many other periods and places – e.g. Blazevicius 2013; Romanowicz 2013). The rules for games involving marbles are many and various, but the vast majority involve pitching them at a target (Gomme 1894, 1898; Dalken 1949; Opie and Opie 1997). Such games are particularly prone to result in loss, increasing potential for their incorporation into archaeological deposits. As twentieth-century marbles were made of glass they are very durable in such deposits – and also easily noticed during excavation, even by volunteers with no prior experience (as indeed are most plastic toys / toy fragments). Discussion between participants helped illuminate particular aspects of such finds, one example being a chipped marble from Test Pit 3 (Figure 8, top centre), whose damaged state might have been overlooked had it not reminded one participant of a game (notably absent from the scholarly literature) whose players aimed to be the first to break a marble by throwing it against a wall.

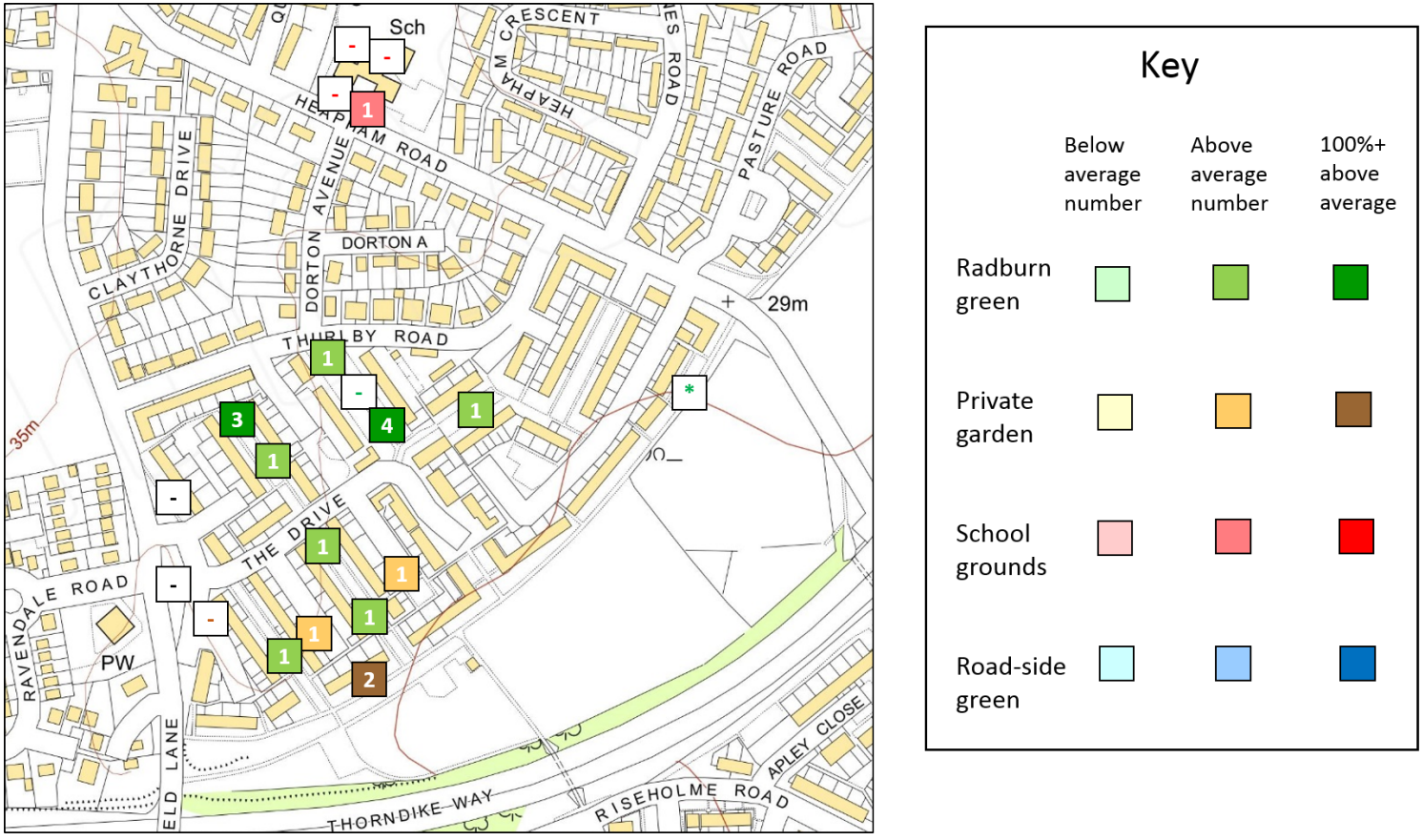

FIGURE 9: Distribution of child-related items from excavated test pits, with numbers of finds indicated within test pit squares (Ordnance Survey details © Edina Digimap, annotations © the authors).

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Mapping the distribution of the child-related finds (Figure 9) shows how many came from the Radburn greens. The inference that these finds were lost or discarded by children playing was supported by correlation with other items also expected to arise from casual loss (rather than deliberate refuse disposal), such as coins (Figure 10). Six coins were found in total, all decimal and low value (ranging from one pence to five pence, the latter of the larger size that was discontinued in 1990); five were from Radburn greens, with the sixth from the school grounds, another place where casual loss by children might be expected. In contrast, the distribution of twentieth-century glass (Figure 11) (more likely to relate to adult/refuse disposal) is entirely different, with Radburn green sites producing only 25.8% of this material. We infer that the child-related finds from Middlefield Lane provide tangible evidence that the Radburn greens were used by children for play and socialization – as claimed by excavation participant reminiscences: "Where I lived was like this [gesturing at a Radburn Green…] we used to have so much fun – we'd be out of the house at nine o'clock in the morning, we'd be shouted back in for your lunch. You just played and you got on with it" (Pool 2016a, 00:40–00:44; audio also in Holland 2017, 00:05–00:13).

Further analysis shows, even more intriguingly, that test pits on the Radburn greens yielded a disproportionately high number of child-related finds, generating 47.6% of the total excavated volume of spoil but 72.2% of all child-related finds. In comparison, enclosed gardens provided 20.3% of excavated spoil and 22.2% of child-related finds, while the school grounds provided 21.5% of spoil but only 5.6% of child-related finds, and test pits sited on greens close to roads produced no identifiably child-related finds at all. This suggests that Radburn greens may have been used *preferentially* by children over and above other types of space on the estate available to them.

Comparison of the Middlefield and village child-related datasets also showed a potentially interesting discrepancy in ascribed gender balance: while items conventionally considered male-gendered (e.g. male action figures, toy vehicle wheels) were found in both assemblages, female-gendered items (e.g. doll parts, tea-set items) were found in village garden pits but were entirely absent from the Middlefield assemblage. This imbalance may, of course, be an insignificant bias in an as-yet relatively small dataset, but it echoes Baxter's (nineteenth-century) Michigan study (Baxter 2004, 72–78)[3] and chimes with other studies of play and place attachment amongst twentieth-century children which have highlighted the gendered nature of children's use of space. Male-gendered children in particular have been found to have a more direct, "physical" relationship with their environment (Brown *et al.* 2008, 392), and a wider spatial terrain or "home range" than female-gendered children (Tucker and Matthews 2001; Prezza *et al.* 2001). In contrast, female-gendered children have been found more likely to see their friends at home and, as a consequence, less likely to use outdoor spaces. However, in informal discussions with residents who grew up on the Middlefield Lane estate, there was no consensus as to whether this might explain the absence of female-gendered items from Middlefield Lane. Anecdotally, males tended to agree that girls had not "played out" and

3. This study involving shovel pitting and excavation of nine test pits around a nineteenth-century farmhouse is one of very few archaeological spatial surveys of a recent domestic settlement site to use excavated material culture of childhood to explore the use of space by children.

FIGURE 10: Distribution of coins from excavated test pits, with numbers of items indicated within test pit squares (Ordnance Survey details © Edina Digimap, annotations © the authors).

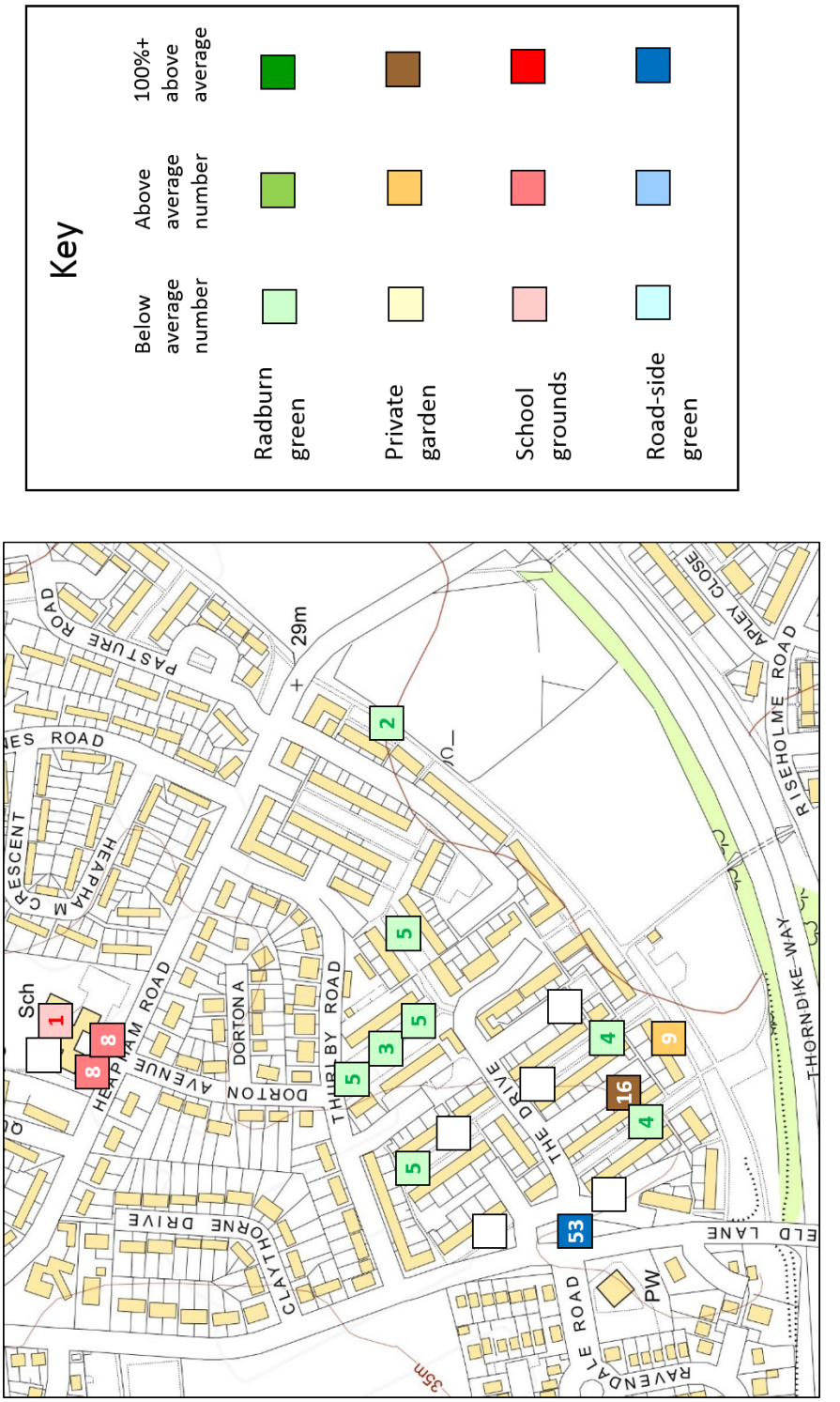

FIGURE 11: Distribution of glass from excavated test pits, with numbers of fragments indicated within test pit squares (Ordnance Survey details © Edina Digimap, annotations © the authors).

females to disagree, with one recalling that "when I was young I used to live on Priory Close [one of the Radburn 'greens'…] you'd go out and you'd be out 'til seven, eight, o'clock with your dollies" (Pool 2016a, 01:44–01:48), and another drily offering that girls may simply have been more careful with their toys than boys. Further exploration of this question is beyond the scope of this paper, but it does suggest that excavation might offer a useful source of evidence for enquiry into gender and the use of outdoor space by twentieth-century children.

The Significance of the Middlefield Lane Evidence of Children's Use of Radburn Greens

We have suggested that the Middlefield Lane excavation data shows that children on the estate used the pedestrianized Radburn greens for play. This is profoundly important because, as we discuss above, a key reason why 1960s planners used Radburn-type planning was precisely to provide children with safe outdoor communal recreational space in which to socialize near their homes, but critics have suggested that such "utopian" planning was unrealistic, and marred by various design flaws (such as an unregulated excess of open public space) that contributed to the decline of the post-war council estate. We infer from the archaeological data from Middlefield Lane that the planners' aims *were* met, in Gainsborough at least. Anecdotally, this inference was supported by estate residents, who voiced overwhelmingly positive memories of childhoods spent playing on the greens (e.g. Pool 2016a). Crucially, the archaeological finds here provide tangible evidence to support memories, whose reliability is otherwise vulnerable to being challenged (Smith 2014).

Our analysis of the archaeological evidence therefore allows us to infer that, in Middlefield Lane at least, the Radburn plan *was appropriate* to the needs of contemporary families: the socializing potential of the communal Radburn greens *was understood* by contemporary families and *was realised* in the use made by children of these spaces. As these inferences contradict the critique of Radburn planning being misunderstood and misused by residents (thus contributing to the estate's decline), it is worth reiterating here that the Radburn green excavations produced relatively little evidence for litter, generating assemblages distinctively uncharacteristic of refuse disposal. As with glass (discussed above), finds of plastic and in particular metal were also lower than would have been expected on the Radburn greens, accounting for only 44.9% and 27.5% respectively of finds of these types. This appears to further undermine Coleman's (1985) methodology of using phenomena including littering to characterize communal spaces as inimical to life on housing estates.

This archaeologically enabled re-evaluation of the merits of Radburn planning is reflected in other recent reappraisals of the post-war council estate, carried out in a time of affordable housing scarcity and in the light of the 2017 Grenfell Tower tragedy.[4] The most recent book on the history of the council estate, John Boughton's *Municipal*

4. The contrast between the aims of Radburn planners and the tragedy of Grenfell Tower in Kensington, west London was noted in a BBC Radio 4 programme about the Middlefield excavations. On-site interviews from Middlefield recorded shortly before the catastrophic fire – in which more than 70 tower block residents were killed – were broadcast two weeks after the disaster (Holland 2017).

Dreams: The Rise and Fall of Council Housing, seeks to "defend social housing, its value and its achievements", and to remind us that the essence of the post-war aspiration was "to treat all its citizens equitably and decently" (Boughton 2018, 4). While acknowledging that there were failures and missteps as well as successes in the post-war council housing programme, Boughton clearly assigns the social problems which emerged on these estates not to design, or to any form of "social engineering", but to mass unemployment brought about by the collapse of traditional industries, together with "residualization" caused by policies which tended to allocate council housing only to the most desperate (for instance, people "deinstitutionalized" following the 1990 National Health Service and Community Care Act).

While granulated scholarly studies of the actual lived experience of post-war council estate life are still very limited in number, Ravetz and Turkington's rejection as a "fallacy" the utopian idea that physical layouts could support the development of healthy communities is also being re-examined in a study which closely considers the relationship between architecture, home and community on a 1960s estate in Edinburgh (Santos *et al.* 2018). Specifically in relation to Radburn estates, recent inter-disciplinary, highly localized "micro-studies" of the life-history of individual estates, combining elements such as residents' memories and the effects of Radburn planning on childhood development, have sought to recast perceptions of these estates as the successful product of a modest, decent, civic and people-centred post-war humanism (Waites 2018). The small number of studies such as those exploring the experience of moving onto newly built 1960s Radburn estates (Bettws in Bloom n.d.) reminds us that assertions such as those of Ravetz and Turkington were not fully explored in relation to the experiences of residents on individual estates, and highlights the need for further research into the lived experience of residents of post-war council estates. The Middlefield Lane excavations have helped begin to do this.

Conclusion

The excavations at Middlefield Lane were the first research-driven archaeological excavations targeting a late-twentieth-century council estate with no known archaeological remains. This paper shows how finds from such excavations can enrich the heritage of twentieth-century housing estates by reconstructing long-term histories, including 20 generations of agricultural labourers and a possible lost medieval settlement and military encampment. Of greatest significance for this paper, however, the test pit excavations at Middlefield Lane have provided tangible new archaeological evidence showing how the key features of the Radburn-type estate, such as its pedestrianized greens, were used by its late-twentieth-century residents, most notably its children, providing a material manifestation of anecdotal recollections by residents.

Excavated finds have shown that children did use the Radburn greens for play, and may even have used these spaces preferentially over other spaces available to them. This shows that local authorities provided effectively for an important aspect of children's nurture as they grew up within local post-war council estates – safe, communal, outdoor play space. This adds substantive new evidential weight to arguments that the ideals of the 1960s estate planners *were* appropriate for contemporary social needs (Waites

2018), and in doing so undermines suggestions that the subsequent decline of such estates can be ascribed to inherent weaknesses in their original design (Ravetz 2001). While it is undeniable that from the late 1970s the social and physical fabric of many council estates in Britain deteriorated, the excavated evidence from Middlefield Lane suggests that this was not because of the way they were planned or how residents related to their iconic communal spaces.

We conclude that community archaeological excavations at Middlefield Lane have made the sort of "distinctive contribution" to knowledge called for by both advocates and critics of contemporary archaeology (Harrison and Schofield 2010; Belford 2014), here providing new evidence for the impact of design on lived lives in social housing estates. Of significance far beyond the UK, this is a salient topic in any country where post-war governments sought to improve mass housing provision.[5] This paper demonstrates the potential of archaeological excavation to advance knowledge and understanding of contemporary life on post-war housing estates, and opens up new avenues for future research, including that exploring child-related material culture in contemporary archaeological contexts – which, while of increasing interest (e.g. Buchli and Lucas 2000; Baxter 2004; Moore 2009; May 2013; Morrison and Crawford 2013), is still too often overlooked.

Understanding the origins and decline of council estates throughout the twentieth century involves untangling a complex range of motives that were philanthropic, utopian, Christian, socialist, idealistic, expedient, negligent and sometimes even corrupt. As such, it is perhaps no wonder that "council housing's broader contribution to twentieth-century material culture and working-class life" has "not had the attention and historical analysis that it deserves" (Ravetz 2001, 3). Meanwhile, the simple aim of providing decent housing affordable to people on low or middling incomes has been lost in increasingly shrill rhetoric in which the very principle of social housing has been undermined from all sides. Could it be hoped that archaeological approaches providing physical evidence for "what works" might be able to help justify and even advance the provision of social housing today, in a time when affordable homes are in short supply and more than 1.2 million households, in England alone, are on the waiting list for social housing (Shelter n.d.)?

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In a project such as this, the number of individuals involved runs well into scores whom space cannot allow us to name individually here, so we would like to give sincere thanks to all the members of the public who carried out the test pit excavations including school staff and pupils, as well as ACIS Community Housing Trust, Hillcrest Early Years Academy

5. See e.g. Ewa Sidorenko's (2014) account of children's toys and play in post-war Poland.

and estate residents who permitted test pits to be excavated on their property. This paper is a tribute to all residents of the Middlefield Lane estate and we thank everyone who got involved in any way at all, whether digging, talking or just pausing to watch. We thank all those who have discussed this work with us and in particular those who commented on this paper, including the three anonymous reviewers for *JCA*, for their insightful thoughts and comments which have been much appreciated. Any errors, of course, remain ours.

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Carenza Lewis is Professor of Public Engagement with Research at the University of Lincoln, UK. She is an archaeologist whose research interests include historic settlements and childhood in the past, and she has directed scores of projects involving fieldwork and excavation across the UK and beyond. She is particularly interested in approaches to research which engage wider publics in order to achieve wider societal benefits. Address for correspondence: School of History and Heritage, University of Lincoln, Lincoln LN6 7TS.

Ian Waites is a senior lecturer in the history of art and design at the University of Lincoln. His research explores the landscapes, histories, dreams and memories of the postwar English council estate. He keeps a blog on this subject – http://instancesofachangedsociety.blogspot.com – and he is the author of Middlefield: A postwar council estate in time (Uniformbooks, 2017). Address for correspondence: School of Design, University of Lincoln, Peter DeWint Building, Brayford Pool, Lincoln LN6 7TS, UK.