At the Edge of Space: the Archaeology of Boundaries within a Landscape for Young Convicts

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Abstract

Within a landscape, boundaries are the physically or socially defined lines that mark the limits of spaces. They can appear static and binary, and therefore analytically restricted. Yet it is argued here that while space is often analyzed in archaeology to inform social, economic, or institutional interpretations of a landscape, the analysis of boundaries is a complimentary method that captures movement, control, and prohibition mechanisms. Analyzing boundaries is shown to reveal aspects of change – sometimes diachronic and sometimes ephemeral – and a malleability that is often linked to materiality. The examination of the early nineteenth-century historical boundaries of Point Puer, a juvenile convict prison (1834–49) located in lutruwita/Tasmania, Australia, is used as a case study to illustrate their common archaeological forms. It is reasoned that the analysis of boundaries contributes dynamic interpretations of historical landscapes by theorizing boundaries as spatial frameworks to examine social and experiential elements of space.

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Introduction

Point Puer Juvenile Establishment was an early nineteenth-century institution for convict boys. Situated on turrakana/the Tasman Peninsula in lutruwita/Tasmania (then Van Diemen's Land), Australia, it operated between 1834 and 1849 and is today managed by the Port Arthur Historic Site Management Authority (PAHSMA). Its landscape, in combination with its documentary record, provides an example of one of the earliest experiments in the separation and formalized training of criminal juveniles, its historic lifecycle spanning an important global shift in the management of this segment of the incarcerated population. Institutions focused on the criminalization and "reformation" of youth were popularized in this period (Shore 2011), and were contradictorily presented as both a humanitarian training opportunity and a punishment, regardless of the realities of its likely devastating impacts on young lives. Point Puer's isolated landscape was a complex arrangement of institutional buildings, paths, roads, and other infrastructure, with additional spaces that served assorted industrial, agricultural, recreation, or reform purposes. One of the most defining elements of these spaces, both for the historical occupants and the landscape archaeologist, is their boundaries. A boundary, which can be both built or naturally demarcated or a mixture of both, is defined here as a line that marks the limits of a space and further, as an "edge," described by Dee (2001:115) as places of separation and transition. For this research, boundaries are identified only as those that were physically demarcated in some way. The apparently open, sprawling, and disorganized environment of Point Puer, through the presence of boundaries, can be shown to have been full of constrained spaces and controlled routes that the occupants were required to navigate. These boundaries, while not always apparent within the landscape today, have been reconstructed through archaeological and documentary sources.

This article examines how boundaries were encountered and used by the site's staff and occupants in their everyday lives: to establish hierarchy, encourage reform, increase or decrease productivity, or identify or provoke non-compliance. A commonality of these site functions is the contested control of movement. This research seeks to understand the process of reform through the implementation of boundaries and – consequently – constrained and managed historical mobilities. The theme of mobility has been a productive field of historical landscape archaeology (such as Beaudry and Parno 2013; Schwalbe 2020). This research further develops the literature on approaches to spatial analysis of historical landscapes by offering boundaries as a conceptual framework. Through spatial analysis, this article demonstrates that boundaries, which are often readily visible through historical plans and a physical presence, are valuable by providing a framework for understanding the social dynamics of landscapes.

Point Puer: An Isolated Landscape

The Point Puer establishment was (and remains) situated on a northward projecting peninsula of the same name, located 1.5 km across a sheltered harbor from Port Arthur penal station (Fig. 1). Port Arthur, a larger convict station for the incarceration of adult males, was formed in 1830 as an establishment utilizing convict labor for the procurement of timber. It balanced the dual purposes of resource production and secondary punishment, managing the requirements of industry, and a variable labor force. It did this through diversifying the convicts' tasked labor to reflect their abilities and the level of training available: from the hard and dangerous labor of timber carrying gangs, to the specialized manufacture of shoes and metalwork (Tuffin and Gibbs 2018). Point Puer was similarly designed to force a specific reformative agenda upon young transported convicts that was centerd around a capitalist valuation of human life as labor for the ongoing colonial agenda of Britain. The administrators of Point Puer consequently considered educational and moral improvement, as well as trade upskilling, an important component of the young boys' carceral experience, while arguably neglecting their emotional and physical needs. Ideologies of capitalism, colonialism, and juvenile delinquency coalesced to create a rhetoric of righteous reform that was blind to the harms of permanently separating youth from their home environment back in Britain and placing them within the "care" of the state.
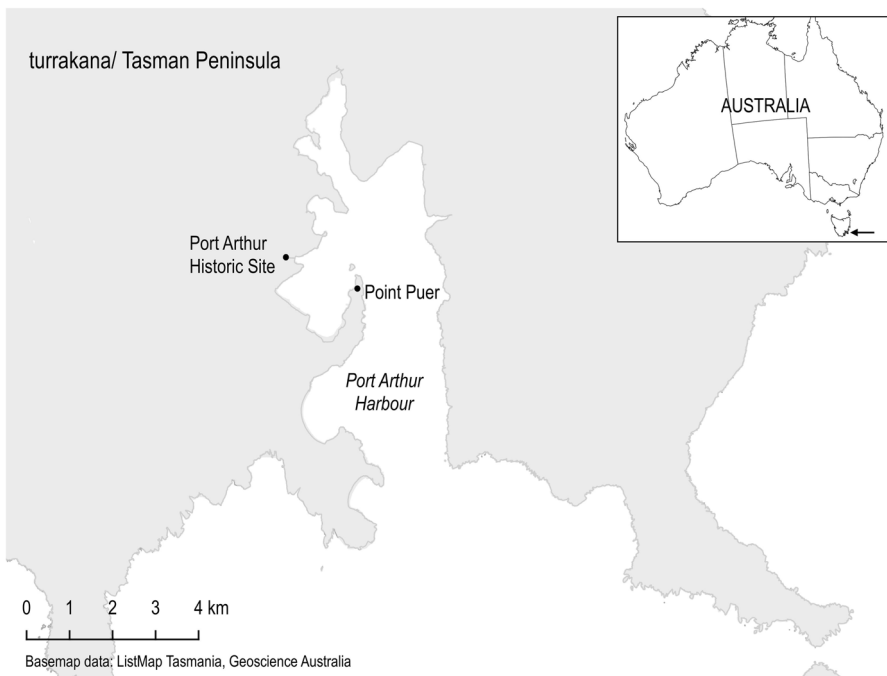

Fig. 1 Location of Point Puer, in relation to Port Arthur and turrakana/the Tasman Peninsula

Point Puer inmates were commonly aged between 12 and 18 years old when they arrived and made up approximately 16% of the estimated 13,000 convicts aged 18 or under who arrived in Van Diemen's Land on convict transport ships (D'Gluyas 2022). The boys were a heterogenous cohort, who were transported for diverse reasons, ranging from a nine-year-old stealing three boxes of toys to a 14-year-old convicted of "indecent liberties with a female child under 7" (Convict Department 1834–39). While many Western examples of juvenile facilities in the early nineteenth century were comprised of a central institutional building, Point Puer was arranged like its parent station of Port Arthur, with "a cluster of separate institutions, united by the infrastructure and regulatory backdrop of control and coercion" (Tuffin et al. 2018:58). From the start Point Puer adhered to a growth pattern that was ad hoc and pragmatic, driven by an at times conflicting coalescence of ideological concerns and local practicalities. Necessity often dominated Point Puer's physical design principles, its ever-changing requirement for spaces of accommodation, work, and security because the station was in a constant state of flux.

Today, the remnant landscape of Point Puer presents a complex palimpsest of sites of former buildings, the remnants of roads, trackways and jetties, quarries, and a large number of more ambiguous landscape features, and earthworks. As such it can be a struggle to comprehend how the various site elements functioned and related to each other – either spatially or temporally. The layering of events across spaces provides a dataset that has required diachronic and spatial reconstruction from documentary and archaeological sources. Despite methodological issues in representing temporality in geographic information systems (GIS) (Witcher 2000:14), the representation of boundaries in historical research form the temporal and spatial geometry to build detailed reconstructions of the past. This is partly because boundaries can translate well into map-based vectors, even when they are extracted from visual, written, and physical sources. Boundaries carry two meanings for landscape analysis. The first is as a historical reality; archaeologists can identify boundaries that were meaningful landscape elements for people in the past. Boundaries also function as an analytical reference framework created by the archaeologist. In short, they form an essential part of the semantics of describing a landscape in the past and present.

Boundaries in Archaeological Landscape Contexts

Landscape studies have a long history of incorporating the physical elements of boundaries as a primary analytical element that constitute interfaces. These have included descriptions of physical forms of boundaries in parish landscapes, particularly watercourses, banks, ditches, hedges, boundary stones, dry stone walls and timber paling fences, or combinations of these (Johnson 2007). Boundaries, predominantly used to describe territorial or field limits, often incorporate topographical features and are persistent through time, despite changes in function and ownership (Aston 1985:143; Johnson 2007). Territoriality requires a delimitation of space and therefore a boundary, since "space does not create territory unless the boundaries of the space are used to affect behaviour or control access" (Mullin 2011).

Boundaries may have binary connotations of inside/outside and can appear analytically static, but can also be a critical juncture of interaction. This is especially the case in spaces designed for control, where boundaries change across the day to enforce ideology (encoded as regulations). Boundaries feature in theoretical and ritualistic approaches to transition, expansion, and change, for example in studies of marginality or personal growth (Costello 2017; McKinnon 2010; Moran et al. 2013). The bounded and in-between spaces of many powered landscapes have had an enduring place in scholarship, particularly the archaeology of enslavement (Bates et al. 2016; Norton 2020; Orser 1992). Further, the archaeology of colonialism often incorporates boundaries as spaces of interaction and liminality: fluid and ambiguous landscapes that offer geographical, social, cultural, and ideological negotiations of space (Delle 1998; Naum 2010; Singleton 2001; Swartz 2021). When conceived of as a threshold, boundaries can also have gender and age implications, particularly in domestic or liminal contexts (Auge 2013; Crawford et al. 2018). Boundary studies therefore form many parallels to the study of movement, which is also frequently linear and representative of systems and infrastructure (Bassett 2020; Ingold 2011; Leary 2014).

Despite their prevalence, boundaries are rarely the focus of research. Instead, they are considered as either spatially formed (such as the border of a nation), physically formed (for example, a fence line in a landscape), or socially formed (for instance a domestic threshold), although are not directly considered with all these components together. Yet boundaries have the greatest potential for their shared material, spatial, and social qualities. It has been shown that the examination of the production, maintenance, and negotiation of social space has high research potential, even where evidence of physical boundaries may not be present (Kooyman 2006). A discipline where the applications of such an approach have been fruitful is social geography, where researchers have studied the intersection between physical boundaries and ambiguous social associations. Carceral geographers in particular have made significant progress in this regard, perhaps due to their focus on the details of both "inside" and "outside" realms of space (Moran et al. 2013). There have been few archaeological approaches that examine how boundaries may be both physically and socially constructed and contested. Exceptions have been archaeological studies of the social implications of features such as fences, walls, ceilings, and floors (Kent 1990; McAtackney 2011; Pickard 2010) and the study of internment, institutions, and social/spatial connectivity (Bavin 1994; Casella 2016:140; De Cunzo 2006; Fennelly 2014; Myers and Moshenska 2011).

Methodology

This study is based upon a synthesis of both archaeological and historical sources. Quantum GIS (QGIS) has been used as a key tool to facilitate a spatial history approach (Norton 2020). A primary purpose of this synthesis is to visualize, interrogate, and explore various sources of data, rather than rely on GIS for technical analytical tools. More than 30 historical maps and plans of the Point Puer site dating between 1828 and 1845 were georeferenced, along with

the integration of archaeological survey data, spatialized offence records, construction events, production statistics, and labor records. Boundary depictions are common and important elements of mapped carceral landscapes. In the nineteenth century, maps provided an opportunity for administrators to control what was officially visible to higher authorities and suggested permanency and order. Therefore, maps should be understood as detached from the past boundary negotiations that actually occurred within these landscapes, which a wider range of sources may illuminate.

Light Detection and Ranging (LiDAR) remote sensing data was used to assist with the identification of archaeological features prior to site survey. LiDAR data was collected in 2014 with a resolution of 0.20 m. Visualizations of hillshade, principal component analysis (PCA) and sky view factors (SVF) were used to show the detail of the landscape's surface, illuminating patterns of likely human modification (Devereux et al. 2008). The integration of LiDAR data for historical archaeological landscape analysis of this kind have been described elsewhere (Tuffin et al. 2020).

Some sources, including toponyms and the spatialization of documentary sources, can assist in identifying some ambiguity in historical boundaries. A particularly useful method for recovering such boundaries at Point Puer has been the analysis of juvenile convicts' offending patterns. Their collective misdemeanors, when spatially mapped, show incursions into forbidden spaces and therefore patterns in how boundaries were experienced and negotiated by the boys. However, the temporal resolution of such records can constrain their use; areas could be out of bounds only at certain times, based on daily, weekly, seasonal, yearly use of spaces that are therefore not collectively visible. Since boundaries make up the division between allowed/not allowed, there is clear flexibility and multiplicity in how these formed. In institutional settings, multiplicity could also have served an important role of establishing power, as authorities could change the parameters of control, triggering discipline when they felt like it.

Results: Forms of Boundaries

Point Puer's landscape was demarcated by a diversity of boundary types. At its most basic level, the place was contained on a peninsula bounded by water on its western, northern, and eastern margins. The eastern and northern limits were also accentuated by rocky cliffs. Both the water and cliffs introduced danger as a control mechanism. Inmates may have felt a heightened sense of fear associated with these boundaries. The southern side was defined by a liminal zone where the infrastructure of the station gave way to uncleared land. A strip of land cleared of vegetation and patrolled by a military guard known as the "line of demarcation" divided the trades and general accommodation area from that given over to punishment and incarceration. This latter zone later also included officer accommodation and gardens (Fig. 2). Across the site, boundaries were marked by infrastructure and landscape modification. The common boundary types are described below. Different materialities reveal distinct purposes and priorities, with each type discussed
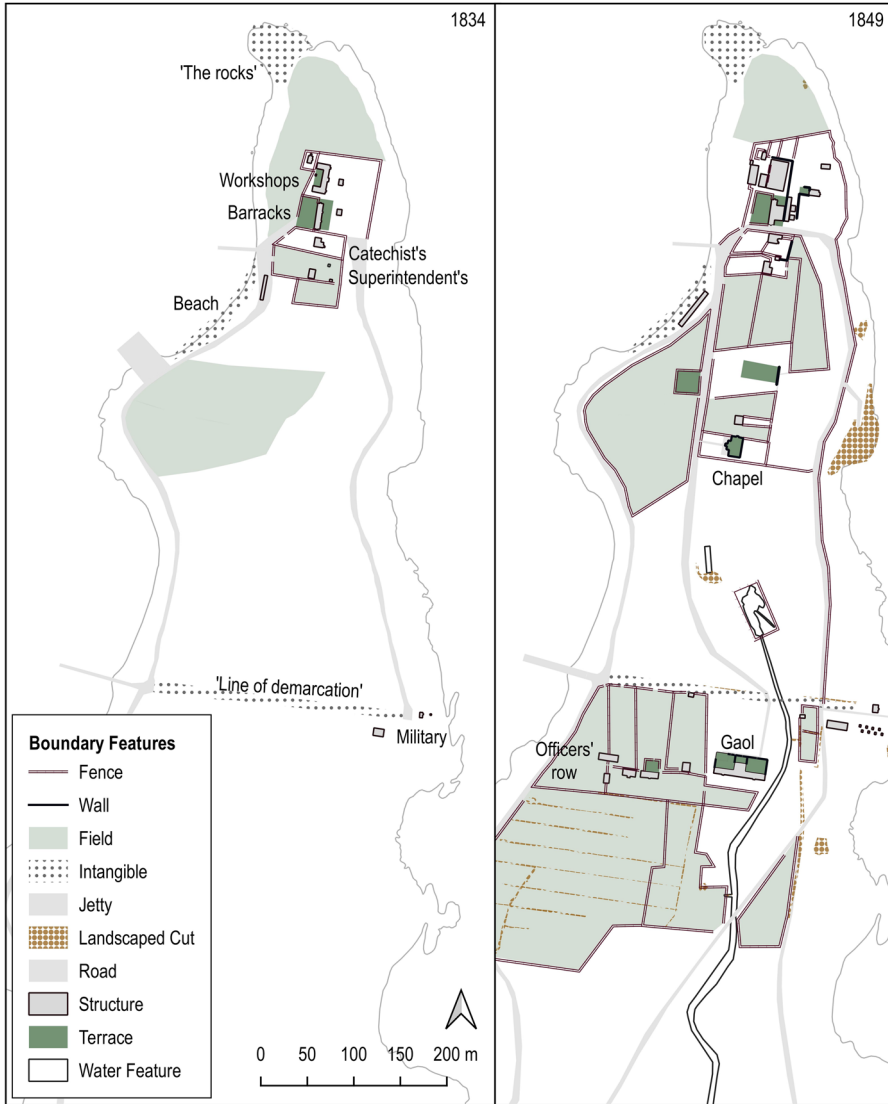
Fig. 2 Plan of Point Puer in 1834 and 1849, showing changes to the extent and types of boundaries across the site, including earthworks, walls, terraces, and fences. Elements labeled on the 1834 plan were also present in 1849

separately. A commonality between the tangible boundaries was their use of local materials. Siltstone, timber, and earth were readily available on the peninsula, while sandstone, bricks, and metal were imported to the establishment and were therefore used more sparingly.
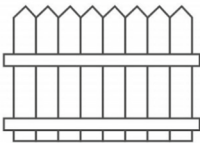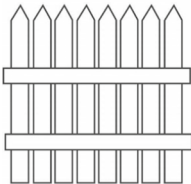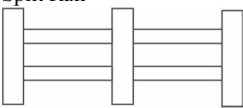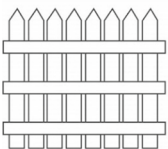
Earthworks

Earthworks are a common archaeological feature. Any "bump, lump, or hollow" can form part of earthworks features (Aston 1985:14). Ground-truthed LiDAR data of Point Puer shows a scattered array of ditches and mounds. Mounds across the site seem to be mostly incidental accretions. These include structural demolition materials mounded near previous building sites as well as structural ruins such as chimney bases. Ditches appear to be more prevalent – or possibly better preserved – with correlation between the location of boundaries and drainage features.

Point Puer was a heavily cultivated landscape (see Fig. 2). Today, linear ditches mark the location and extent of these work areas. For example, a set of linear ditches have been located to the south of the "line of demarcation" and the officers' row, which comprise eight evenly spaced linear features with east-west alignments. The location of these correlate with mapped cultivated land in 1845 (Booth 1845). Further, administrative records from 1843 state boys were "cultivating Government Gardens and clearing land, burning, trenching and claying a considerable portion of the same in endeavouring to make it productive" (Booth 1844), suggesting these trenches were convict-era and agricultural. Government gardens are interpreted as the cultivation areas intended to produce vegetables to supplement Point Puer rations and worked by convict labor, distinguishing them from the private gardens of officers at the establishment. Earlier descriptions of agriculture in colonial Australia noted "open ditches to carry off the surface-water are generally all that is required" (Atkinson 1826:90). Trenching in this context may have been designed for drainage or irrigation, to mark ownership of allotments for government and private officer plots, or bound work areas for labor. The latter is particularly plausible, as agricultural labor of convicts required area-based taskwork. The ditches are approximately 1 furlong (201 m) in length, making the bounded areas roughly traditional field dimensions of 1 ac (.60 ha) each. Overseers managing convict labor could have used boundaries like these to separate work teams, quantify the labor performed by visually noting progress along these even allotments, and even compare performance against other groups. These linear ditches are only a small part of the landscape, but are a physical reminder of the detail required to manage an unruly, juvenile convict population.

There is evidence that fences and ditches were used in combination at some locations around Point Puer and were similar to descriptions of ditch or bank fencing combinations used across early colonial Australia (Pickard 2010:117–118). While there is no physical evidence of fences, the comparison of historical plans and archaeological features indicate that fences were often built along the alignments where ditches have been recorded. While fence and ditch combinations could have been an imported British technique for aesthetic and traditional values (Tarlow 2007:44), the Point Puer fence and ditch combinations appear to be practical and technically simple boundary markers. Ditches and fences at the site are commonly at the edge of cultivation areas, roads, or wider perimeter areas, and therefore served similar purposes to – or in conjunction with – rough and split rail fencing (discussed below). Ditch and fence combinations like these could simultaneously protect land and provide water management. These ditches were unlined and dug into sandy

Table 1 Table of types of fencing described as made by boys at Point Puer

Fence Type	Interpretation of Form	Function at Point Puer	Quantity Made	Year Made
Fencing	Likely usually consistent with paling style.	General fencing for small numbers of panels.	5 panels muster yard 4 panels workshops 2 around graves	1836 1836 1837
Paling	Comprised of vertical pales, often dug into the ground. Sometimes supported with a horizontal bar.	Yard boundaries for workshops, the reservoir, government gardens and likely private (free) spaces.	8 panels 156 panels	1837 1837
Palisade	Comprised of tall (up to 2m) vertical pales, often dug into the ground. Sometimes supported with a horizontal bar.	Used for jetty rail, timber yard and general fencing purposes.	228 Panels Jetty length 57 Panels	1840 1840 1841
Rough	Likely consistent with split rail.	No function listed.	142 Panels	1839
Split Rail	Post and rail style, with two or three rails split from round logs.	Used for a perimeter fence.	96 Panels 364 Panels	1840 1841
3 Rail Palisade	Combination of tall, vertical pales with three horizontal rails.	No function listed, historical sources suggest perimeter fencing nearest domestic areas (Figure 3)	54 Panels	1839

soil, indicating that they were more likely used for demarcation than water-holding channels. Since Point Puer perimeters were not fenced until at least 1839 (Table 1), it is probable that linear ditches were excavated as boundary markers, being quick

and cheap to construct. In some areas prior to 1839, land cleared for cultivation was further marked by field stones collected from the area (Franklin 1838).

Fences

A fence is an upright physical barrier, less substantial than a wall and used to control access to an enclosed area of ground. In a penal setting they became loaded with much more significance, with varying degrees of censure applied for their transgression. While fences can be made of many materials such as vegetation (hedges or brush), earthworks, steel, or stone, in early nineteenth-century Australia they were commonly timber (Pickard 1998, 2010). The type of fencing at Point Puer replicated those commonly found during the early colonial period, most commonly rail and palisade (Bigge 1822:42). Point Puer records describe paling, palisade, three rail palisade, rough, and split rail fences (see Table 1). There was likely to have been considerable overlap between these terms and physical forms, since administrative records were inconsistently descriptive and prepared by a variety of authors. For example, the perimeter fence is described as split rail, but is shown as a rail palisade type in a visual source (Fig. 3). Records indicate that all fencing, gates, and latch fittings were built by convict boys. Timber was felled and brought to the station by adult convicts, where it was reduced in sawpits to the split logs, planks, and rails required. Carpenters then erected the fences, using fittings made by the blacksmiths (D'Gluyas 2020). In 1826, fences in the colonies were described as "the greatest and most important improvement" and that fencing was usually performed by men who

Fig. 3 A sketch taken from the rear of the superintendent's allotment showing a boundary three rail palisade fence likely built in 1840. Source: Catherine Augusta Mitchell, 1849, "View of Cape Pillar and the entrance to Port Arthur taken from the back of the garden at Point Puer," Allport Museum & Library of Fine Art, Hobart, FA379

had developed the skill after arriving in the colony (Atkinson 1826:91). Point Puer fencing tasks therefore made use of local materials and available labor sources, but further taught young convicts skills useful for their future in the colony and how to, by British standards, correctly separate "improved" spaces from "wilderness."

The frequency of fencing-related tasks in the labor returns of Point Puer (such as Booth 1844) and visual documentary sources (see Fig. 3) suggest that timber fences were extensively used across the landscape, although none survive archaeologically. Functionally, fences filled a variety of roles. In agricultural contexts, fences provided stock management or the protection of crops from animals or people, and therefore, fencing in or fencing out (Pickard 1998). Fencing with close vertical pales (paling, palisade or rail palisade) would have been effective at excluding small wildlife from the site or keeping small domesticates. As discussed further below, the materiality of fences likely reflected status, with paling fencing being almost exclusively used around government or free staff spaces. Palisade fencing enclosed spaces for control, being up to 2 m high. As such, at Point Puer they were used to keep boys out of restricted areas, such as the jetty and water reservoir, as well as confine them to an area of work or punishment. The rougher forms of fencing, such as split rail, were likely used to delineate spaces without physically restricting movement, since they could be easily climbed over. For example, they could have bounded cultivation and wider perimeters, excluding those already naturally bounded by cliff or water.

Walls and Terraces

Walls and terraces are discussed together here because they often appear in tandem and are both commonly constructed from combinations of earthworks, stone, brick, and timber. Walls can be conceptualized as maintaining two functions: that of a face and that of a barrier (McAtackney 2011). Both functions have material requirements: visual appearance, height, durability, and strength. All buildings on the peninsula required the construction of walls; work that was performed by the boys learning carpentry, stone masonry, and laboring. In contrast, terraces were used selectively to elevate and level, therefore seeming at Point Puer to serve functions primarily relating to symbolism and visibility.

Terraces and walls were used around the Point Puer landscape to formalize important spaces by elevating a building or vista, including the gaol and chapel (see Fig. 2), which were both extensively terraced. For example, LiDAR and soil coring indicated that up to 1.5 m of clay and crushed building materials had been imported to form the terrace of the gaol (D'Gluyas 2022). Further, the only instance of walls used to define an open yard at Point Puer were around the gaol, where they separated those under punishment. Although the manual labor required for its construction may have been completed as part of "busy work" for the growing population (D'Gluyas 2020), the terracing of the gaol also created three-tiered spaces for varying levels of punishment and increased the visibility of the gaol yard. Convict boys built the chapel, which is discussed further below, following a design that used an artificial platform to heighten its prominence with the landscape. Smaller retaining walls and terraces were used more frequently, such as at the superintendent's

yard, muster yard, workshops, bakehouse, timber yard, and officers' row. They were used more often than not to create level surfaces through both cutting and filling, either for the placement of a structure or the pursuit of an activity.

Discussion: Analyzing Landscape Boundaries

In using boundaries as a framework, two ontologies are apparent: land and landscape. While land is a physical and measurable area, landscape, while defined in many ways, inherently relates to people. Tim Ingold (1993:153–154) defined the difference, stating "you can ask of land… how much there is, but not what is it like." This approach uses both land and landscape, by taking analysis beyond the measurable components of a place and into the realms of how space was experienced. Figures 2 and 3 can be compared to illustrate this. Figure 2 presents a "land" ontology, where boundaries are quantified as discrete edges to space. In contrast, Fig. 3 considers the same place, filtered through the eyes of a free occupant, Catherine Mitchell. As the only known contemporary drawing created from within Point Puer, it is unsurprising that it is primarily a sketch of space and boundaries. The gaze is set toward open water and sky, which frames freedom and remoteness against an establishment of constraint. In the foreground, a fence stretches out, beyond which lies: a distinct vertical boundary representing risk, a wilderness of "unimproved" land and buildings that functioned as punishment. It is unclear which features are boundaries, and who is bound by them. This is an exploration of a "landscape," in which boundaries are contested and complex.

The material forms of boundaries have an identifiable correlation with the purposes they intended to serve. In the context of Point Puer, boundaries formed by the institution created spaces that primarily established hierarchy and controlled movement for labor and productivity. Boundaries on the site also more broadly performed the primary function of incarceration through spatial restriction (Casella 2011). The penological landscape and its boundaries afforded both closed and open space: the former marked by enclosure and surveillance, the latter by more intangible forms of formal control (Tuffin et al. 2018:58). At Point Puer, the navigation of both open and closed spaces defined the movement of all occupants, be they free or convict. The control of labor-related movement at Point Puer was a particularly critical function of the site. As has been discussed elsewhere (D'Gluyas 2020), labor tasks at Point Puer required bounded infrastructure, particularly roads, walled workshops, and delineated agricultural land to establish routines and workflows across the site and wider hinterland.

While boundaries served many and changing purposes, this section will focus on examining how the manifestation of boundaries impacted hierarchical, and therefore social, relations at the site. Boundaries commonly existed between social groups present at Point Puer, notably distinguishing the site's free and incarcerated as well as adult and juvenile occupants. However, these divisions were not binary, since there were also free youth (children of staff) and adult prisoners working as overseers. This research presents the local variation of Point Puer, but also examines potential wider implications for other institutional spaces. Specifically, boundary-based

analyses within a historical landscape generates dynamic interpretations by revealing how spaces were designed, used or adapted for control, as well as how actants could have navigated or undermined those controlled spaces.

Establishing Hierarchy

Administrators defined bounded spaces as free or convict, closed or open, and reformative or punitive to delineate the formal hierarchy of the site. The initial priorities appear to have been the fencing of closed spaces, which were usually smaller than open areas and therefore required less resources to fence. The closed, convict spaces of the muster yard and workshops were fenced early on (see Table 1). These targeted those lowest in the hierarchy to control their movements during important institutional activities, which were under the strictest forms of surveillance and supervision. Fences were also initially used to keep convicts out of closed private spaces. For example, staff fenced their private residences and gardens and the government gardens with palings or palisades to define property and the food contained within as inaccessible (see Fig. 2).

As discussed above, it appears that the delineation of wider work areas, such as land under cultivation, was initially established through earthworks using ditches. The entire institutional landscape was controlled by the "line of demarcation," an area that had been completely cleared of vegetation to facilitate easy movement and surveillance. It had been located to mark the boundary between the trades and gaol zones of the station, with the latter an area entailing much more restriction on movement. In colonizing environments, borders could act as an additional measure to "ward off the 'wilderness'" and separate the land conceived of as useful and civilized from the untamed and unproductive landscape from which it was carved (Casey 2006:89). At Point Puer it was about separating the "wilderness" of the gaol space from the "useful" area where the trades were carried out. Clearly marking out the punishment area with the "line of demarcation" patrolled by red-coated military was intentionally designed to increase fear of offending.

While some boundaries were designed as a consistent barrier (a wall, for example), the dynamism of some boundaries was critical to their functionality in creating hierarchy and control. In these cases, the boundary could change in meaning, often in cyclical ways. A small-scale example of this is visible at the solitary cells at Point Puer. The cells were predominantly constructed by young convict labor, with wooden structures built upon stone and brick foundations. Archaeological evidence suggests the eight solitary cells at Point Puer were no bigger than 7 ft 2 in x 5 ft 5 in (2.2 m x 1.7 m) (Fig. 4a), whereas the block of separate cells were 5 ft 6 in x 3 ft 6 in (1.7 m x 1 m) each. The solitary cells appear relatively consistent with other contemporary designs, but the separate cells were substantially smaller than adult equivalents (Kerr 1988:153). It is also possible that the cells were also more restricted in height for young convicts, although ceiling heights are not known. The archaeological materiality of these structures appears static: they punished through the overnight incarceration of boys (Fig. 4a). However, examining the functional change of some of the associated boundaries reveals a repeated pattern that enforced
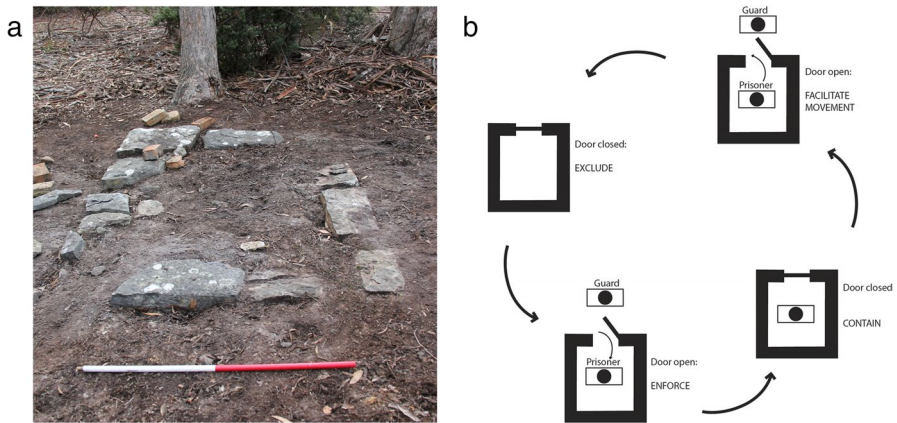
Fig. 4 **a** Archaeological remains of a solitary cell for young convicts at Point Puer. **b** An illustration of cell doors as boundaries, showing cyclical daily changes where repetition reiterates hierarchy. The function of the boundary is capitalized for each phase

discrete messages across a day. Within a carceral institution, repetition was essential to reinforce control (Moran 2015). A solitary cell – an enclosed unit with a shut door and prisoner inside – acted to contain and punish. When the cell opened in the morning (also beyond the control of the prisoner) the boundary shifted to facilitate movement at the behest of the guard. The door then closed to form an empty cell and a boundary that functioned as a threat (a space that prisoners *could* occupy) or an area of exclusion (convicts should have been laboring elsewhere). At the end of the working day, the convict returned to the cell and was subjected to the process of containment (see Fig. 4b). This illustration highlights the short-lived complexity of some boundaries, despite little or no change to the physicality. The malleability of the boundary and its function was used to reinforce the hierarchy of control over the prisoner through repetition.

Solitary cell doors were more than a traversable portal; they enforced specific messages for administrators and more importantly were *experienced* by many boys. Boys were more likely to be subjected to solitary confinement than adults at Port Arthur, and there are recorded punishments of stretches of up to 40 days (D'Gluyas 2022). The materiality of the boundaries (walls) were important to that experience, particularly since the brutality of the small and dark spaces are emphasized by the physicality of that restriction still visible in the landscape (see Fig. 4a). The wooden structures would have been more economical to construct, but afforded some room for resistance from boys, who were "sometimes found together in one of the separate cells in the morning…they sometimes break out of them and abscond… and sometimes remove boards so that provisions may be conveyed to them" (Horne 1843:110). The conveying of provisions to incarcerated boys in particular presents a functional shift in the boundary, from an imposed control of movement by administrators, to a material focus for resistance and collaboration between inside/outside. The timber structures also potentially allowed less acoustic control, with offences of "obscene, threatening, or abusive language" (Table 2) frequently

Table 2 Summary of 3653 offence records of Point Puer boys, making up an estimated 25% of all offences committed internally at the site

Type	Number	Percent of Total (%)
Offences of Transgression (34%)		
Assault	135	4
Other offences against the person	6	0
Absconding	316	9
Absence without leave	521	14
Other Offences against property/Housebreaking	112	3
Malicious damage against property	130	4
Other Offences (66%)		
Arson	2	0
Fraud and false pretences	27	1
Larceny	460	13
Receiving	10	0
Robbery	56	2
Drunkenness	1	0
Indecent, riotous, or offensive conduct	141	4
Obscene, threatening, or abusive language	150	4
Other offences against good order	434	12
Conspiracy	38	1
Disobedience	142	4
Gambling	32	1
Idleness	72	2
Insolence	203	6
Insubordination	6	0
Misconduct	259	7
Neglect of work	42	1
Other offences	186	5
Refusing to work	111	3
Trafficking	49	1
Total	3646	100

Source: Conduct records (CON 31, 33), Tasmanian Archives, transcribed by PAHSMA and the *Landscapes of Production and Punishment* project and Extracts from Bench Books (TP 33, 129, 134), Tasmanian Archives, see also D'Gluyas, 2022, Appendix E

occurring in the cells. Such sonic offences could be an effective noncompliance tool because they allowed the offender to "permeate multiple spaces without moving," essentially breaking the physical boundaries imposed on inmates (Hemsworth 2015:24). A focus on the cells and how they were experienced as boundaries therefore reveals the malleability of them for the agendas of both inmate and overseer.
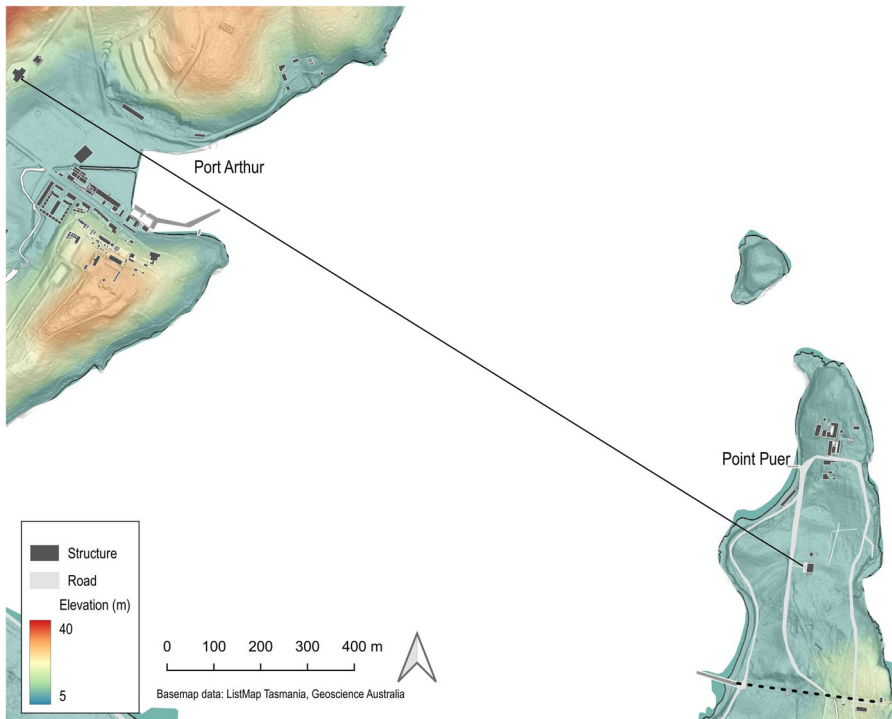
Fig. 5 LiDAR derived digital elevation model and hillshade of Point Puer and Port Arthur showing intervisibility between the Port Arthur church and the Point Puer chapel. The "line of demarcation" is also shown as a dashed line

To enforce hierarchy, more emphasis was placed on siting buildings, rather than their enclosure and associated landscaping. The Point Puer landscape was topographically complex, with high ground along the eastern side, a valley just to the north of the line of demarcation, another valley further to the north and undulating slopes to the beach on the western side. The "line of demarcation" used a portion of the landscape with a natural slope from a high point on one side (where the military were based) to the shore on the other (Fig. 5). Administrators sited key buildings for convict use (primarily the chapel, barracks and workshops) with views to the adult penal station of Port Arthur across the harbor to the west. Similarly, Point Puer's chapel had a line of sight to the church at Port Arthur, an entrance placed on the former structure's western side to emphasize this connection (Fig. 5). It is notable that the Point Puer chapel was oriented approximately north-south on its main axis with a west-facing entrance. While Christian churches are traditionally orientated east-west, west-facing entrances are a product the east-facing expression and do not appear to have religious meaning in themselves (Kräuchi 2021). The chapel orientation also appears in keeping with a north-south orientation of the topography and wider setting, including the Isle of the Dead, which also orientated free graves in a north-south
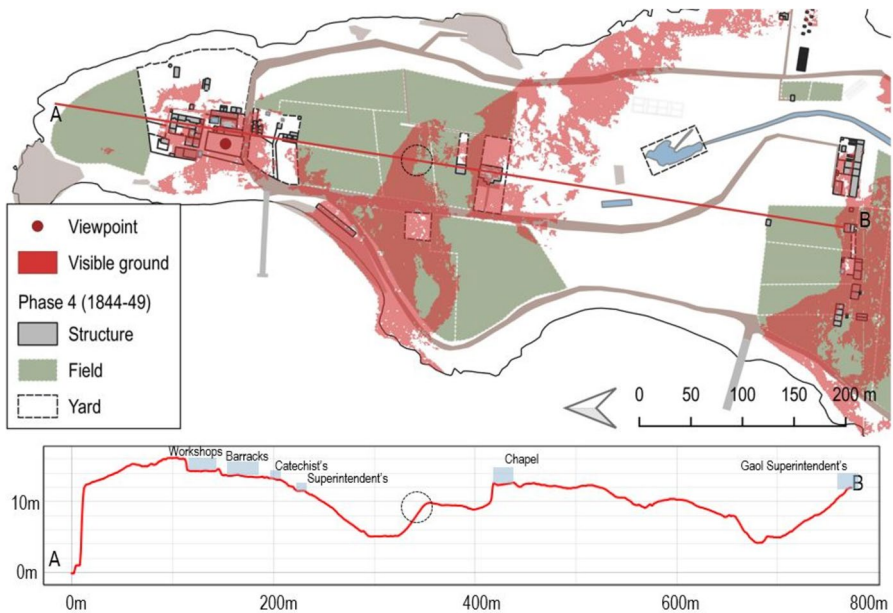
Fig. 6 The visual "axis of reform" of Point Puer, marked by central line, showing a viewshed (visible areas are shaded) of a juvenile convict (1.4 m height) standing in the muster yard and corresponding profile of the topography (A-B), with vertical exaggeration. The interpreted locations of key buildings are marked in the topographic profile. The altered slope (discussed below) near the chapel is shown with a dashed circle

direction on the high side of the island, potentially to utilize the topography to accentuate status of free over convict (Ross 1995:66).

The chapel was also placed with consideration to its impact upon the immediate penal landscape. It had visibility to almost every Point Puer structure, with topographic prominence further promoted by a raised stone and earth platform (Jackman 2001). Further, the view between the workshops and the chapel was further enhanced through the creation of a slope to the north of the chapel (Fig. 6, dashed circle). Archaeological evidence suggests the area was modified, likely borrowing English techniques in line with Lancelot "Capability" Brown's landscaping movement, to create "a calm, serene stability, and one that reflected the character of the local topography" (Symes 2016:11). The result was that the distance to the workshops was foreshortened, symbolically making the trades area, and therefore reform itself (faith and education), feel more attainable from the chapel. It may also have neatened the views of the chapel from the catechist's and superintendent's quarters or heightened the walking experience between these buildings (Felus 2020). From the workshops the slope would have elevated the chapel to an even more dominant position, an effect increased by the diminutive size of much of the prisoner population. The chapel and the gaol superintendent's, catechist's, and superintendent's quarters were located on prominently higher ground and in alignment from north to south (Fig. 6). Together these features created what could be described as a visual "axis of reform," between the highest-ranking supervisory

staff, religion, and work (Fig. 6, red transect line). There was further landscaping to ensure prisoners had a clear view of the chapel particularly upon exiting through the central gaol gateway (Stephenson 2012). The axis of reform appears to have also driven the north-south Point Puer chapel alignment over a more traditional east-west orientation.

While convicts were physically contained within the carceral buildings and yards, the remaining landscape emphasized the hierarchical power of the authority of staff, education, work, and punishment and bound them into separate areas. At the center was the chapel, which visually connected religion to all bounded spaces. It is possible that these symbolic landscape elements were intentionally heightened to maximize impact on the young inmates that were deemed more malleable but in need of more overt messaging than their adult counterparts.

As the settlement developed, there was a marked rise in the establishment's physical boundaries and hierarchical differentiation (see Fig. 2). Rough and split rail fencing forms were utilized (see Fig. 3; Table 1), which would have facilitated quick construction and visibility through them for surveillance. Such ease of construction was likely prioritized over the symbolic power presented by the boundaries themselves. In British landscapes, Aston (1985:43) has noted a lack of hierarchy within the physicality of boundaries, for example, parish boundaries are often no more impressive than nearby field boundaries. Similarly, at Point Puer, sandstone, a material imbued with symbolic and physical strength, was not extensively used. This was despite its common use at the nearby Port Arthur penal station. Walls were instead formed from locally acquired, weakly-bonded siltstone and timber, at once less visually appealing and easier to dismantle for escape. This example highlights the contradictory nature of administrative management decisions. The symbolic foundations of establishing hierarchy and control could be subordinate to economic or pragmatic efficiencies of the carceral landscape.

Negotiating Hierarchical Space

Both convict and free occupants attempted to make free space for themselves amid that which had been officially sanctioned. Since boys incarcerated at the site were able "to amuse themselves in any innocent and rational manner within the prescribed bounds at any of their leisure intervals," they had the means to carve out free spaces from the landscape (Booth 1837:71). Toponyms relating to recreational misdemeanors recorded at Point Puer suggest an area known as "the rocks" was a free space for the juvenile occupants. Interpreted as being located at the northern tip of the site (see Fig. 2), "the rocks" were bounded not by a fence, but by a steep slope and buffered by a wide, cultivated expanse that separated it from the closed spaces of the workshops and barracks. The boundary between "the rocks" and the official carceral spaces was chosen by the boys as delineating their free space hidden from surveillance, rather than constructed. It importantly also enabled free to-and-from movement, particularly quick access from their work and domestic quarters. As a small, rocky escarpment that afforded different experiences to that of the wider and formalized carceral landscape (Dee 2001:174), "the rocks" also potentially highlight

the youthful qualities of free space selection. Ethnographic research indicates a preference among young people for "small enclosures, edges and natural settings with affordances supporting their self-directed play" (Aminpour et al. 2020). While contextually sensitive, such analysis supports the agency of boys in selecting free space in the Point Puer landscape that engaged with bounded space.

Boundaries can also be porous, not just acting as a binary barrier of exclusion and inclusion. There is a bias toward the materiality of powered cultural landscapes in supporting the dominant occupiers (Spencer-Wood and Baugher 2010). The control of others through the landscape often dominates the evidential record, either through the design of such spaces, or through outcomes. However, boundary analyses, where the materiality is commonly associated with the dominant group, helps discern how power was negotiated between parties. A boundary can be transgressed or physically broken (porosity) and therefore represents the agency and intent of various occupants.

At Point Puer there is ample evidence that the boys moved across administratively imposed boundaries of control within the landscape. This occurred either as sanctioned movement, or as transgressions. Over time, administrators chose to curate sanctioned prisoner movement away from staff free spaces. Initially, unfree movement was restricted to the peninsula's eastern side, connecting the actively used spaces of the gaol in the south and the workshops and barracks in the north (see Fig. 2). This turned the free staff quarters, at this time just of the superintendent and the catechist, into points of surveillance that juveniles were required to pass by. It also utilized the higher terrain marking this side of the peninsula, thereby maximizing the visibility of prisoner movement. During this early period, evidence shows less boundary infrastructure (fewer buildings, fences, and walls) to the contain prisoners, meaning surveillance possibly played a stronger role in controlling sanctioned movements.

By 1841, administrators had created a new locus of staff accommodation, the officers' row, to the west of the gaol area (see Fig. 2). In response, the movement paths changed to prioritize a central road. Running between the officers' row and the gaol, the central road served to excise one from the other, thereby forcing convict activity away from the private quarters. By this time, there were a far greater number of staff and their families, and staff quarters formed a separate, private sphere rather than a point of surveillance. The superintendent and catechist remained in a more exposed and visible portion of the landscape hidden only by paling fences, however, their roles possibly required this exposure, as part of the symbolic landscaping of a visual axis of reform. The hard boundaries of fences for the officers and their families were not only a physical deterrent for trespass but also a clear visual separation of free children from their convict contemporaries. This analysis highlights that boundaries functioned to both contain occupants into allocated spaces and facilitate movement between those areas, but further that bounded space was temporally specific, with significant changes with shifts in the site's demographics.

Collation of offending data suggests that a primary means of juveniles negotiating control and power at Point Puer was through the transgression of boundaries. The most common offence within sampled juvenile convictions at Point Puer was the transgression of boundaries by being absent without leave (see Table 2). Other

boundary transgressions included absconding (transgressing the boundaries of the entire establishment), housebreaking, and other offences against property (in particular breaking cell walls or property fences). Together these made up 34% of sampled offences at the site (see Table 2). The prevalence of absconding beyond the "line of demarcation" potentially highlights the intangible qualities that juveniles also placed in the boundary; beyond the line was "escape" even if into the "wilderness."

Spatial analysis of juvenile absenteeism at Point Puer showed a high degree of attempting to transgress the boundaries set by authorities by moving into open or free spaces to avoid surveillance. "The rocks," government gardens, and beach were open spaces with low intrasite visibility that were targeted possibly for this reason. Evidence shows that the privately occupied, domestic spaces of free staff could also be transgressed as "offences against property" (see Table 2), to unintentionally or intentionally disrupt the lives of private individuals at the station. Transgressions into free spaces were recorded within the quarters of the superintendent, catechist, officers, overseers, and gaol superintendent. The prevalence of the superintendent's quarters as a location for offences may have reflected targeted transgressions against hierarchically higher figures at the site. Alternatively, it was an opportune targeting of a topographically lower and therefore less visible location (see Fig. 6). These transgressions indicate an intention to alter the established material and social boundaries of the site to diminish the security and authority of privately bounded space.

Conclusion

While archaeologists may regularly map boundaries, this research shows that more intentional analyses of these features can reveal how bounded space was socially constructed and experienced. The progression of the physicality and social meaning of (including responses to) boundaries over time provides a layer of interpretive value to the landscape. Methodologically, the spatial containment of information by concentrating on boundaries has been fruitful, since they have been shown to provide "real-world anchors to which corresponding elements in the mapped representations" can be fixed (Tuffin and Gibbs 2019). At Point Puer, the topography, dispersed site elements, and modern vegetation cover make understanding the carceral landscape difficult. Boundary analysis addresses such issues by sidestepping the scalar constraints of small-scale excavation, or a concentration upon particular structures or precincts. Analyzing boundaries assists in understanding a complex site, reconstructing spatial edges, and thereby emphasising their place within the landscape.

Returning to the ontological difference between land and landscape (Ingold 1993), boundaries perhaps appear only as an element of land – a rigid, inert or at least a quantifiable entity – but the simplicity is deceptive. This analysis exposes boundaries as part of a landscape. Even the simplest of documented features, such as a cell door, could be reinterpreted as a boundary of mutability and contested space shaped by interactions with its materiality, placement, and purpose. Archaeologists

can use boundaries, like landscapes, for their ambiguity; not as a "geometrical entity to be represented easily on a piece of paper, but rather room-for-manoeuvre" (Gosden and Head 1994:114).

Through the examination of Point Puer, this research acknowledges the interconnectedness of boundaries; a single boundary forms part of a system/s comprised of space and edges. The complex interplay of various bounded spaces and the people within them defined the movement and activity of the site, in this case, linked to the juvenility of the occupants and their harsh institutional experiences. Boundaries expose the tensions between binaries like intent and outcome, control and transgression, or reform and recidivism. We are reminded that boundaries were experienced from both "sides," and that the subjects of the "reformative" agenda were young boys caught in a system that consistently ignored their individual needs. There is no direct correlation between a single function and form of boundaries, but together with the analysis of mobility, hierarchy, and their functional roles, the materiality of boundaries can be shown to have direct implications on intended outcomes. While evidence of boundaries can therefore be ambiguous, they provide a substantial framework for analyzing a wide range of themes relevant to historical archaeology. It is argued that boundaries, which are often visible even within a sparsely documented landscape, are valuable by providing a physical framework for understanding the social elements of past places and spaces.

Declarations

Conflict of interest The authors declare no conflicts of interest.

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