

**SEVENTH INTERNATIONAL CONFERENCE ON URBAN HISTORY**  
**EUROPEAN CITIES IN COMPARATIVE PERSPECTIVE**  
Athens – Piraeus, 27-30 October 2004

**SPECIALIST SESSION**  
**CLEAN AND DECENT TOWNS:**  
**SOCIAL, ECONOMICAL AND POLITICAL ASPECTS OF URBAN SANITATION**

**NOBILITY AND FEAR IN THE 'PUBLIC FACE' OF LONDON'S  
SEWERAGE SYSTEM**

©

**PAUL DOBRASZCZYC**

---

Dept of History of Art and Architecture  
University of Reading, UK  
p.a.dobraszczyc@reading.ac.uk

This paper considers the Abbey Mills Pumping Station (1865-68), the largest of four that comprised the 'public face' of London's new Victorian sewerage system, largely built in the 1860s. This paper will describe the various conceptions of sewers that come together in the spaces of this building, and suggest that these conceptions sought to displace the prevailing notion of sewers as a locus of fear and disgust.

## *Old and New Sewer Spaces: Paris and London*

The contemporary historian David Pike has drawn attention to nineteenth-century ideas about underground space, in particular the ways in which these articulated the urban underground as a symbolic space - that is, as a metaphor of society as a whole.<sup>1</sup> In relation to Paris, we find this expressed most directly in Victor Hugo's 1862 novel *Les Misérables*. Society, for Hugo, is compared to geological strata with 'upper and lower galleries';<sup>2</sup> at the bottom of society are located its most seditious elements - the 'fearsome' workers and the revolutionaries. The direct association of sewers and filth provided a powerful metaphor for these lowest levels of society; these spaces were more or less directly associated in the public mind with the moral filth of the city; they were places where, according to Hugo, 'monsters may be born'.<sup>3</sup> Such fears were directly related to the notion of these spaces as hidden, dark and uncontrollable.

However, in *Les Misérables*, Hugo makes a clear distinction between the old sewers, seen as fearsome places, and the new sewers built from the 1850s onwards by the engineer Eugène Belgrand, which he describes as 'clean, cold, straight and correct ... orthodox and sober [where] the filth is well-behaved'.<sup>4</sup> According to Hugo, the transformation of the sewers of Paris divested them of their symbolic power. In 1867 a section of the Paris sewerage system was opened up to the public;<sup>5</sup> visitors who descended into this transformed underworld admired the cleanliness of the spaces, the lack of smell, and the brilliant lighting.<sup>6</sup> The sewer visit provided the means by which public understanding of these spaces, still, according to Hugo, seen in largely symbolic terms, might be directly challenged by a new

---

<sup>1</sup> D. Pike, 'Down by the Dark Arches': A Cultural History of the Adelphi' in *London Journal*, 2002, p. 37.

<sup>2</sup> V. Hugo, *Les Misérables* (London, 1988; 1862), pp. 619-20.

<sup>3</sup> *Ibid.*, p. 620.

<sup>4</sup> Hugo, *Les Misérables*, p. 1071. On the transformation of the Paris sewers see D. Reid, *Paris Sewers and Sewermen: Representations and Realities* (Cambridge, Massachusetts, 1991); D. Pinkney, *Napoleon III and the Rebuilding of Paris* (Princeton, 1956); M. Gandy, *The Paris Sewers and the Rationalization of Urban Space* (<http://www.strath.ac.uk/Departments/Geography/pdf/Gandy.pdf>, 1998).

<sup>5</sup> On the Paris sewer visit see Reid, *Paris Sewers and Sewermen*, pp. 37-52; L. Hooper, 'A Visit to the Sewers of Paris' in *Appleton's Journal*, 3 April 1875, p. 430; *Illustrated London News*, 29 January 1870, pp. 128-9, 'The Paris Sewers'.

<sup>6</sup> Reid, *Paris Sewers and Sewermen*, pp. 41, 44.

mode of conception - that propagated by the engineer, who plans and builds sewers according to rational and scientific principles.

In London, it was the pumping stations, rather than the sewer visit, that provided the 'public face' of a largely invisible and inaccessible sewer system. Unlike those in Paris, London's new intercepting sewers were designed to accommodate both rainwater and household sewage, and they were consequently considered too dangerous to open to the public. London's topography made the pumping of wastewater necessary at certain points in its new sewerage system. Joseph Bazalgette, the engineer of the system, considered the Abbey Mills Pumping Station the most important of London's four main pumping stations and this building provided a focus for the presentation of the project, culminating in a banquet held at Abbey Mills on 30 July 1868 to mark the opening of the entire system north of the Thames.

The Abbey Mills Pumping Station was the last to be constructed in the first phase of the main drainage project in the 1860s. It was also architecturally the most extravagant. The first, the Deptford Pumping Station (1860-64) on the south side of the Thames is a simple, restrained and classical building, reflecting the tradition of water pumping station design seen earlier at Kew in 1834. The Crossness Pumping Station, also on the south side and finished in 1865, marked a dramatic shift in intention: with its isolated site on the Erith Marshes and richly decorated chimney, it attracted considerable attention from the architectural press - the *Builder* describing it as 'Medieval with Byzantine and Norman features'.<sup>7</sup> It is a stylistically eclectic building, clearly designed to impress, and features a cathedral-like main entrance and magnificent interior decorative ironwork, the centrepiece of which is the central octagonal space with its mixture of painted wrought and cast iron. The later and smaller Western Pumping Station, opened in 1874, marks a return to the restrained classical style seen at Deptford.

The design features seen at Crossness are continued and developed at Abbey Mills: the decorative octagon is transformed into the building's most striking architectural feature and the internal ironwork is both more unified and lavish. The style of the building has been variously described as Byzantine, Italian Medieval, Russian, Ruskinian Gothic and Moorish. The *Builder* commented in 1868 that the building 'seemed to be an elegant structure in a swamp [which] might be taken for a mosque or Chinese temple'.<sup>8</sup> The original twin ventilation chimneys, richly ornamented and standing 212 feet high, gave this building a prominence that has consistently attracted public attention, and today it still provides a focus for introducing the public to Bazalgette's system.<sup>9</sup>

---

<sup>7</sup> *Builder*, 16 February 1863.

<sup>8</sup> *Builder*, 26 September 1868, p. 719.

<sup>9</sup> Thames Water plc's annual 'Open Sewers Week' uses Abbey Mills as a focal point for both a sewer visit and a lecture on the history of London's sanitation.

## *Rationalized Space*

On the occasion of the public opening of Abbey Mills, Bazalgette was asked to provide a written description of the building that was distributed to the visitors.<sup>10</sup> His own comments downplay the architectural extravagance of Abbey Mills; instead, he focuses on the building's qualities as an engineering achievement.<sup>11</sup> Its function was to house eight steam-powered beam engines that provided the lifting power to pump the sewage - according to Bazalgette, 'a total of 1,140 horse-power, lifting a maximum quantity of sewage and rainfall of 15,000 cubic feet per minute to a height of 36 feet'.<sup>12</sup> Bazalgette's focus on the engineering function of Abbey Mills relates how he sees this building: as an important part, but only a part, of his underground citywide sewer system - a system that was rationally conceived and constructed.

Bazalgette's drawings for the engine house, which made up part of the original contract for the pumping station, strongly articulate this rationalistic conception; the fifty-three detailed drawings articulate, in very precise terms, the engineering function of the building.<sup>13</sup> A five-storey structure - three below and two above ground - the building's vertical emphasis results from the need to accommodate the pumping machinery. The series of sectional plans express this well: the basement level houses the incoming sewage which was fed into wells; the two storeys above this contain distribution pipes that enable the sewage to be pumped up the required thirty-six feet; the two storeys above ground house the machinery of the beam engines, massive in their bulk and supported on decorative cast-iron fittings. The cruciform plan of the building, seen throughout these sectional plans, is a design feature developed to house the eight beam engines, with two engines placed in each of the four arms of the cross. Each part of the building's vertical structure, both below and above ground, is tailored to different elements of the pumping machinery. This vertical conception of space is very different from that which characterised public ideas about sewers: here is a new technological conception of underground space, defined by scientific and rationalistic principles,<sup>14</sup> and articulated in specific detail in Bazalgette's drawings.

## *Symbolic Space*

Bazalgette's rationalistic conception of vertical space is offset by the stylistic and decorative elements of Abbey Mills - elements that 'dress up' the engineering function and

---

<sup>10</sup> Metropolitan Board of Works, Minutes of Proceedings, 24 July 1868, p. 956, s. 1.

<sup>11</sup> J. W. Bazalgette, *A Short Descriptive Account of the Thames Embankment and of the Abbey Mills Pumping Station* (London, 1868).

<sup>12</sup> *Ibid.*, p. 5.

<sup>13</sup> Abbey Mills Pumping Station Archive, Works-as-executed Collection, Abbey Mills Pumping Station, Contract Drawings, Buildings &c., 1865.

<sup>14</sup> See Pike, 'Down by the Dark Arches', p. 37.

present it in symbolic terms: the underground spaces of the building are claustrophobic, dark and disorientating while the second-storey gallery level is light, airy and filled with naturalistic decoration; the cruciform plan, cathedral-like doors and internal octagon suggest religious associations normally restricted to churches. Such design elements were employed in many contemporaneous Victorian industrial buildings, most notably markets, which were often built to a cruciform plan and with similar decorative central octagonal pavilions.<sup>15</sup> The symbolic associations of these design features indicate that the architectural embellishment seen at both Crossness and Abbey Mills has a very different function from mere technological expediency.

The architect of Abbey Mills has been variously attributed to both Bazalgette and his assistant engineer Edmund Cooper.<sup>16</sup> However, when the architect Charles Driver was elected as an associate member of the Institute of Civil Engineers in 1900, his nomination papers state that ‘he assisted ... Sir Joseph Bazalgette ... in designs for the ... Pumping-stations at Abbey Mills and Crossness.’<sup>17</sup> Driver, who had been practising as an independent architect since 1860, was a specialist in the use of iron, and he designed many provincial railway stations, including Leatherhead in 1867 on the London, Brighton and South Coast Railway – a building contemporaneous with Abbey Mills and displaying similar stylistic characteristics. In a paper presented to the Royal Institute of British Architects in 1875, Driver promotes iron as a constructive and decorative material, arguing that the disgust felt by architects in using iron was a result of the lack of their engagement in engineers’ projects.<sup>18</sup> His own working relationship with Bazalgette is difficult to ascertain: no correspondence exists and there are only scant references to Driver’s involvement in the minutes of the Metropolitan Board of Works.<sup>19</sup> Bazalgette, like many other civil engineers, drew on the expertise of architects for important public buildings, and he employed Driver as a consultant on both Crossness and Abbey Mills. However, Driver’s contribution remains unspecified. This distancing of Driver from the project is difficult to explain and raises many unanswered questions about Bazalgette’s intentions. Certainly, in his prosaic description of Abbey Mills, Bazalgette

---

<sup>15</sup> On market design see J. Schmiechen and K. Carls, *The British Market Hall: A Social and Architectural History* (New Haven and London, 1999). The market hall in Bolton (1853-56) was built to a cruciform internal plan with a richly ornamental iron octagonal light well at the intersection of the two transepts.

<sup>16</sup> See G. Stamp and C. Avery, *Victorian Buildings of London 1837-1887: An Illustrated Guide* (London, 1980), p. 83; and *Illustrated London News*, 15 August 1868, p. 162, ‘The Metropolitan Main Drainage’.

<sup>17</sup> Institute of Civil Engineers, Candidate Circulars, Session 15, 1900, p. 6.

<sup>18</sup> C. Driver, ‘On Iron as a Constructive Material’ in *RIBA Transactions*, 1<sup>st</sup> Series, vol. 25, 1875, p. 166.

<sup>19</sup> Metropolitan Board of Works, Minutes of Proceedings, 8 July 1864, p. 737, s. 6, ‘Driver CH, travelling expenses, Engineer’s Department, May & June 1864, £8.18.6’; 3 November 1865, p. 1177, ‘Driver CW (sic), Bill for making watercolour drawing of pumping station, Crossness, October 1865, £35’; 10 May 1867, p. 550, ‘Driver CH, professional charge re: Abbey Mills pumping station, £42’ and ‘Weekly wages, week ending 24 April 1867, £24.16, 1 May 1867, £30.15.9’. Bazalgette had powers to employ temporary staff, like Driver, without them having any official post in the Metropolitan Board of Works.

downplays the architectural significance of the building in favour of a more rationalistic and functional reading.

The extent of Driver's contribution is indicated by the extensive decorative use of iron at Abbey Mills and Crossness as well as in the similar design features seen in both buildings; it is here that we sense his desire to elevate the value of iron above its strictly utilitarian character. This was an attitude that went against the grain of architectural practise and theory in the 1860s, which, under the influence of the influential architectural critic John Ruskin, strove for truth to nature in architecture, rejecting the use of cast iron because it was a synthetic, artificial material. Iron was seen by Ruskin as not fit to express the noblest architectural ideas.<sup>20</sup> Indeed, Ruskin viewed the use of cast iron as excluding a building from being true architecture;<sup>21</sup> likewise, cast-iron ornament is condemned as 'cold, clumsy, and vulgar'.<sup>22</sup> But in the interior of Abbey Mills we see no such reservations; rather a reversal of Ruskin's views: the profuse decorative cast-iron motifs, including daffodils, bluebells and acanthus leaves imitate nature so convincingly that iron here effectively appropriates the function of a natural and 'noble' material such as stone.

Such 'dressing up' of iron, seen by most architectural historians as a kind of structural deceit, at Abbey Mills provides a symbolic embellishment of the building's engineering function. For the Victorians, morality and architecture were inseparable and the morality of architecture was expressed through style and decoration. To Victorian architectural critics like Ruskin, the engineering function of this building would have possessed no moral meaning in itself precisely because it was divested of all such symbolism.<sup>23</sup> Therefore, the moral value of Abbey Mills is communicated through its decorative and symbolic elements: the cruciform plan and cathedral-like doors use religious symbolism to elevate its meaning above mere utility; the exterior façades include features alluding to Gothic Venice - the apotheosis of nobility in architecture, according to Ruskin -<sup>24</sup> while the interior use of decorative ironwork represents an attempt to both elevate iron as a noble constructive material and to give further symbolic meaning to the functional aspects of the building.

### *Spatial Conflation*

The spaces of the Abbey Mills Pumping Station, as the visible part and symbolic representation of a largely invisible system, are ones where old and new conceptions of sewer

---

<sup>20</sup> J. Ruskin, *The Seven Lamps of Architecture* (Mineola, New York, 1989; 1849), pp. 53-8.

<sup>21</sup> *Ibid.*, pp. 40-1.

<sup>22</sup> *Ibid.*, p. 56.

<sup>23</sup> On metaphor and Victorian architecture see E. N. Kaufman, 'Architectural representation in Victorian England' in *Journal of the Society of Architectural Historians*, vol. xlvi, no. 1, March 1987, pp. 30-8.

<sup>24</sup> J. Ruskin, 'The Nature of Gothic' in *The Stones of Venice* (London, 2001; 1852), pp. 139-70.

space collide: Bazalgette's new rational understanding of sewers conflates with the architectural embellishments which use an older symbolic language to suggest the nobility of both sewers and the constructive material associated with them, namely iron. It remains a point of contention whether these new ideas really did successfully displace and transform the old conceptions of the wider public. On 30 July 1868, many of London's dignitaries did see Abbey Mills when a sumptuous banquet was held at the site to mark the official opening of the entire sewer system north of the Thames. Visitors, who were each supplied with a copy of Bazalgette's description of the building, marvelled at the lack of smell, the lightness of construction and the rich floral ornamentation, all of which suggested a true ennoblement of the sewer and its function.<sup>25</sup> But such a sense of nobility depended on the effective concealment of the underground parts of the building where the sewage was pumped. In the almost identical ceremony that took place at Crossness on 4 April 1865, visitors also admired the beauty of the ornament and the 'poetical' qualities of the religious symbolism, but many also descended into the crypt-like space of part of the vast subterranean sewage reservoir.<sup>26</sup> Despite the temporary exclusion of the sewage and the dazzling lighting, some visitors felt distinct unease at the thought of being in such close proximity to 'the filthiest mess in Europe'<sup>27</sup> ready to 'leap out like a black panther' after the guests had left.<sup>28</sup> It was in these underground spaces, close to the 'ignoble' sewage, that older associations were stimulated. The complete invisibility of these spaces at Abbey Mills perhaps closed down opportunities for such associations to emerge. However, such concealment by no means marks the demise of these older conceptions: rather, it has been contended that: 'in mental life, nothing that has once taken shape can be lost ... everything is somehow preserved and can be retrieved under the right circumstances'.<sup>29</sup>

---

<sup>25</sup> For accounts of this ceremony see *Illustrated London News*, 15 August 1868, p. 162, 'The Metropolitan Main Drainage'; *Illustrated Times*, 22 August 1868, p. 122, 'London Main Drainage: Abbey-Mills Pumping Station'; *South London Journal*, 1 August 1868, p. 7, 'The Thames Embankment and the Main Drainage System'; *Daily News*, 31 July 1868, p. 5, 'Opening of the 'Thames Embankment and the Abbey Mills Pumping Station'; *Daily Telegraph*, 31 July 1868, p. 2, 'Opening of the Thames Embankment Footway'; *Marylebone Mercury*, 8 August 1868, p. 2, 'The Abbey Mills Pumping Station'.

<sup>26</sup> On the opening of Crossness see *Illustrated London News*, 15 April 1865, p. 342, 'The Prince of Wales at the Metropolitan Drainage Works'; *Illustrated Times*, 15 April 1865, p. 226, 'The Main-Drainage Works at Crossness'; *South London Journal*, 8 April 1865, p. 5, 'The Great Metropolitan System of Drainage: Opening of the Southern Works by the Prince of Wales'; *Daily News*, 5 April 1865, p. 5, 'Opening of the Metropolitan Drainage Works by the Prince of Wales'; *Daily Telegraph*, 5 April 1865, p. 2, 'Opening of the Main Drainage by the Prince of Wales'.

<sup>27</sup> *South London Journal*, 8 April 1865, p. 5.

<sup>28</sup> *Daily Telegraph*, 5 April 1865, p. 2.

<sup>29</sup> S. Freud, *Civilization and its Discontents* (London, 2001; 1930), p. 7.