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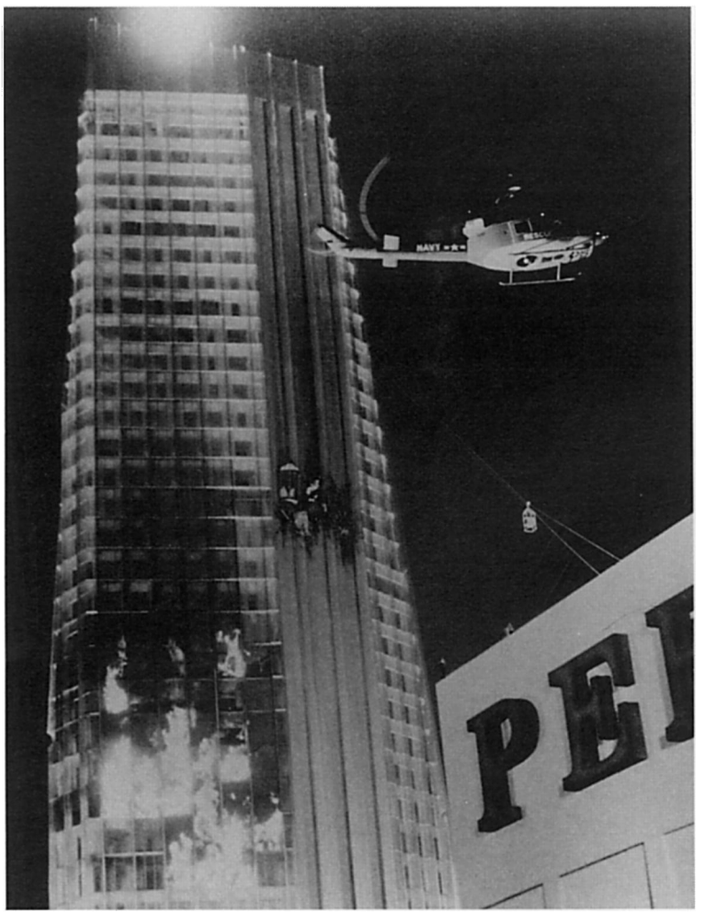

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TOWERING INFERNO: THE METAPHORIC LIFE OF BUILDING SERVICES

David Bass

I do not like ducts; I do not like pipes. I hate them really thoroughly, but because I hate them so thoroughly, I feel they have to be given their place. If I just hated them and took no care, I think they would invade the building and completely destroy it. I want to correct any notion you may have that I am in love with that kind of thing.

Louis Kahn[1]

Fear is part of the architect's initial response to a potential invasion which could 'completely destroy' a building. To overcome his fear Kahn adopts a number of strategies. First, he dissembles, proclaiming an active hatred for ducts and pipes. Second, he gives building services the mental space of a grudging respect, which he acknowledges in proposing a segregation between 'their' place and 'our' place. Third, in an extraordinary conflation of fear and desire, he deflects allegations that he is in any way in league with these forces: he denies that he is 'in love' with them and, to increase the distance between himself and these objects of his disavowed love, he phrases the denial in cool and disparaging terms ('I want to correct any notion you may have', 'that kind of thing'). In enforcing his psychological attitudes to 'them' in his architecture, Kahn seeks to legitimate his spatial policy by means of metaphors, which he misunderstands and misuses. But before unravelling Kahn's confusions we must take a long detour to ask: What is there to fear from ducts and pipes? What might this fear be based upon? What is 'their' place?

For the high-class spec builder and most architects, an exposed pipe is an outrage, and triggers the automatic response of 'boxing-in'. A minor victory for architecture over services, such acts of censorship have the same fragile success as the Victorian practice of wrapping piano legs in cloth to conceal their 'nudity'. In a similar way, Kahn inveighs against the offence to the sensibilities which is presented by naked ducts and pipes. But behind his protests there is a deeper dialectic of decency and danger. The naked pipe's capacity to offend is only the surface effect of a deeper threat (though not the deepest): it contains things that move, unseen.[2] A leaking pipe gives cause for anxiety. The breaking or removal of a pipe frees its contents, revealing a low-grade form of life. This 'life', normally restrained but occasionally bursting forth insolently and extravagantly, is at the root of the feelings of disquiet, fear and fascination which are provoked by building services. Such unleashings are a major component of disaster movies, which provide – from the safe distance of the cinema seat – a commonly available experience of the sublime.[3]

On the face of it the central figure in *The Towering Inferno* (directed by John Guillermin, 1974) (Figs. 1, 2, 15) seems a very nice skyscraper. With its state-of-the-art technologies, The Tower is the world's tallest building and its most desirable – a *lapis angularis* of glass and steel. Its architect, played by Paul Newman, is also exemplary: very male (he wears leather and is planning a sabbatical in the wilderness) and very competent (he knows the building's entire electrical specifications and can test wires for conformity by touch), he travels to work by helicopter.

But the Tower's precarious over-achievement, and the irresponsibility of opening it with a glitzy gala before it is even ready, are elements of a hubris that both invites and counterpoints the disaster which ensues. Irwin Allen, the king of disaster movies, and *Towering Inferno*'s producer and co-director, exploited two potent ingredients of cinema: claustrophobia and destruction. The viewer, enclosed in the darkness of the cinema, becomes immersed in the world of the film, a world which is bounded by the container within

which the film's characters are trapped.[4] But the predicament of the victims who are trapped in the Tower is worse than that of those in Allen's other entrapment films. In a sinking ship or a cable car, the container provides some defence against the dangers beyond, but *Towering Inferno*'s container is itself dangerous.

The trouble starts with the tiny detail of a wrongly installed piece of wiring. As the resulting small fire gradually spreads through the building's hidden spaces, its effects become more easily discernible and more dramatic. Initially, it betrays its presence by strange smells, rumblings and oozings through cracks in doors, as it creeps up on couples canoodling in luxury apartments. Later, pantomime-style puffs of smoke accompany the removal of duct covers, and then the fire begins to register in the building's larger orifices, as the doors of a lift open to form an unfortunate proscenium arch for its cargo of burning party-goers (Fig. 2). Finally, the fire starts to destroy the very fabric of the building, bringing down suspended ceilings, breaking windows and, as it escapes from its initial confines to rage through rooms, devouring their occupants. By this stage the situation has passed beyond a mere battle for survival,[5] to assume the character of an initiation – a trial by fire – for the building's hapless inhabitants.

Once its initial borborygmus has escalated into full-blown projectile vomiting, the Tower has become vicious and must be put down. After its water tanks are blown up to douse the flames, the architect muses over the soggy remains of his creation: 'I don't know. Maybe they just ought to leave it the way it is: a kind of shrine to all the bullshit in the world.' The fire has wrought a purification, providing a cathartic escape for the viewer and release for some of the characters, and revealing two aspects of the 'bullshit' involved in its creation: the corruption (nepotism and penny-pinching by the developer) which blighted the building and caused the conflagration, and the ignorance of architects and legislators about the potential dangers of tall buildings.

Towering Inferno, according to Allen, was inspired by one of his nightmares, but it became 'a message movie, although it was not intended to be one. . . . In eleven countries throughout the world where the picture has been shown, legislation is undergoing a rethinking to try to put an end to this suicidal nonsense of people living and working in fire traps.'[6]

The film demonstrates the potential violence of the elemental forces which are constrained by building services. Although the architect's exemplary knowledge of 'where to place the charges' to blow up his tanks means a final victory for mankind against a rebellious nature, it is a close thing and we are humbled.

The uncontrollable power of fire, flood, explosion, legionnaires' disease or vermin is of a magnitude which is associated more with warfare than with design.[7] *Towering Inferno* shows an *apocalypse* (literally, an 'uncovering') and a *catastrophe* ('overturning'), in which the building's support systems are exposed and their subservient role is overturned. Though they rarely exercise such rights, the ineluctable presence of an 'underside' to building services is part of their capacity to instil fear.

The deepest anxieties of a culture are expressed in the catastrophes on which it fixates, and which it represents with ever-increasing realism and on an ever-increasing scale.[8] The wreck of the frigate *Medusa* in 1816 and its associated episodes of cannibalism and treachery irritated and threatened attempts to institute a faith in rational man's essential dignity. Prefiguring the disaster movie in its drama and immense scale, and in providing an apocalyptic spectacle which could be purchased,

1, 2. The Towering Inferno, *John Guillermin, 1974.*

Géricault's 432-square-foot painting *The Raft of the Medusa* (Fig. 3) attracted 50,000 paying viewers when displayed by the showman William Bullock at London's 'Egyptian Hall' in 1820. Such was the public's appetite for ever more extravagant and overwhelming representations of its 'underside', that a 10,000-square-foot narrative painting, *Marshall's Marine Peristrephic Panorama of the Wreck of the Medusa French Frigate and the Fatal Raft*, unfolded in sequence to an orchestral accompaniment, proved more successful than Géricault's painting when competing with it for the public's attention (and money) in Dublin the next year. The success of Marshall's melodrama also demonstrates the powerful role of time in such representations, in which viewers 'live through' the drama of the event.

In this century the prime purveyor of the disastrous counter-dream has been the cinema. Films take the viewer on a passage through time, occupying the visual and aural senses, with little distraction from other sources. Moreover, cinema has the freedom to break laws, to take things apart and overturn or displace them, enabling the spectator to witness scenes of exemplary destruction. As themed experiences and interactive media begin to offer the possibility of (albeit objectively safe) involvement, rather than mere spectatorship, the building-based disaster remains a favoured subject. The computer game 'SimTower' pits the player against lift fires and insect infestations within the enclosure of a tower, offering a personal *Towering Inferno* experience. At the Universal Studios' theme park in Burbank, a subway-tunnel collapse, complete with crashing train, fire and 60,000 gallons of flooding water, can be experienced two-hundred times each day. The 'Backdraft' ride makes a scene from the eponymous film 'really happen'. No solid barrier intervenes between the participant and the fire, and no screen reduces the situation to visual spectacle: curtains of cold air allow visitors to escape this almost-experience without singed hair and blistering skin, having witnessed danger, but not been exposed to it.

Two contradictory approaches to building services are at work here: quiet, competent architects and engineers install them; and film-makers, theme park and virtual reality designers – disaster-mongers all of them – wreck them and tear them out, to delight the slavering crowd. But what is the source of this delight? Is it a desire for revenge on designers, a form of masochism, or does it represent some psychological necessity?

There is no denying the cleanliness; every nook and corner is pure white. Yet what need is there to remind us so forcefully of the issue of our own bodies. . . . The cleanliness of what can be seen only calls up the more clearly thoughts of what cannot be seen.

Jun'ichiro Tanizaki[9]

When disasters do occur, they are unavoidably real, representing the excessive flowering of an 'underside' which already exists in the imagination. Kahn explicitly denies this underside, yet implicitly acknowledges it. Tanizaki clearly recognizes it.

Guided visits to the Paris sewers (Fig. 4), initiated in 1867, explicitly deny the possibility of catastrophe. The craze for such visits – such non-catastrophes – was fuelled by the *frisson* felt between the visitor's ineradicably sure imaginary knowledge of the sewers' horrors, and their absence during the visit. It was an experience of structured disappointment, based on the tension between the (exaggeratedly) clean, odourless surroundings, and the visitors' worst expectations, in which were mixed attitudes to bodily waste, the underground of classical mythology, and Victor Hugo's descriptions of the sewers in *Les Misérables* (published five years before). The sewers' notorious disgorgings are described in the novel:

Sometimes the Paris sewer chose to overflow, as though that hidden Nile were suddenly angry. There were infamous sewer floods. That stomach of civilisation digested badly; the cloaca at times flowed back into the town, giving Paris a taste of bile. These parallels of sewage and remorse had their virtue. They were warnings, very badly received, it must be said. The town was angered by the audacity of its filth, and could not accept that its ordure should return; it must be better disposed of.[10]

In response to these historic upturnings the system was improved: 'Today', writes Hugo, 'the sewer is clean, cold, straight, and correct, almost achieving that ideal which the English convey by the word "respectable" . . . The filth is well behaved.'[11] He praises these 'scientific' achievements and their engineers, and supplies calculations to persuade his readers of the beneficial effects of using sewage in agriculture. But in dispassionately discussing such technicalities he still employs a formidable reserve of metaphor to describe his beloved system – a tree, a sponge, a digestive system, a city, the past – and plays on the associations in the public imagination between waste, criminality and death.[12]

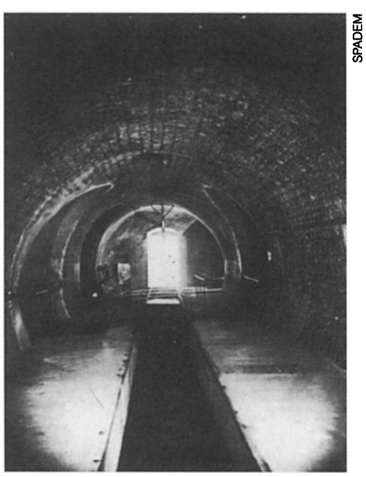
While overseeing the construction of new streets with their associated underground sewer and service passages, Baron Haussmann employs bodily metaphors to describe their role in the city.[13] The urban hygienist A.-J.-B. Parent-Duchâtelet shares terms between the separate studies he made of sewerage and of prostitution, primarily that of the *cloaca* – both prostitutes and sewers are repositories of waste which require policing by the state.[14]

A thin line separates the technical world of the engineer from its metaphorical underside. Histories of building services tend to focus on purely instrumental 'technical advances' and avoid their less positive aspects. A deeper history, which includes the prehistory of building services and of artificial environments, needs to be undertaken.

Reyner Banham's iconoclastic study *The Architecture of the Well-Tempered Environment* investigates 'those services in buildings that provide for the comfort and well-being of humans',[15] focusing on the technological innovations that contributed to the evolution of the kind of building that stars in *Towering Inferno*. The proposed meeting-ground for 'humans' and 'comfort and well-being' is technology, which he characterizes as a neutral provider of environmental succour to passive recipients. Allen's film, produced five years after Banham's book, is a powerful rebuttal to this approach: the objects of the Tower's environmental ministrations are by no means passive, nor can its technologies be construed as neutral. Banham's term 'human' is (over-)biological and denies cultural considerations, whereas the very notion of comfort and well-being is a cultural construct, originating before the period he chooses to study, and not explainable through the pre-architectural paradigm of 'shelter' that he occasionally employs.[16] In any attempt to understand the contradictory attitudes associated with building services, we must first consider buildings which pre-date their development.

An evolving cult of privacy, originating in the seventeenth century, became an obsession in the eighteenth.[17] Responding partly to such demands, and also to an increasing preoccupation with classification and hierarchy, the places of private withdrawal and the conditions deemed appropriate in them became more specific. A repertoire of separate spaces – antechambers, cubbyholes, secret stairs and corridors – was developed, and these were inserted into what would otherwise have been solid *poché* (Fig. 5). Such spaces of *dégagement*[18] provided parallel and separate realms for servants and those whom they served. The 'important' (served) rooms enjoyed the favoured orientations, geometries and spatial sequencing; their shapes were more orderly, their decoration more honorific. The servants' spaces occupied the margins and interstices, whose enclosure acted both to extend and conceal their physical reach. Thus the servant's role, work and body movements were inscribed

3. The Raft of the Medusa, Théodore Géricault, 1819. (Louvre, Paris)



SPADEM

4. Photograph by Félix Nadar of the Paris sewers, 1865.

and encrypted within the architecture. Organizing these operations in plan became a dominant concern of the emerging art of architectural *distribution*, whose concern to map out the locations of separate functioning organs within a complex unity paralleled that of the discipline of anatomy.

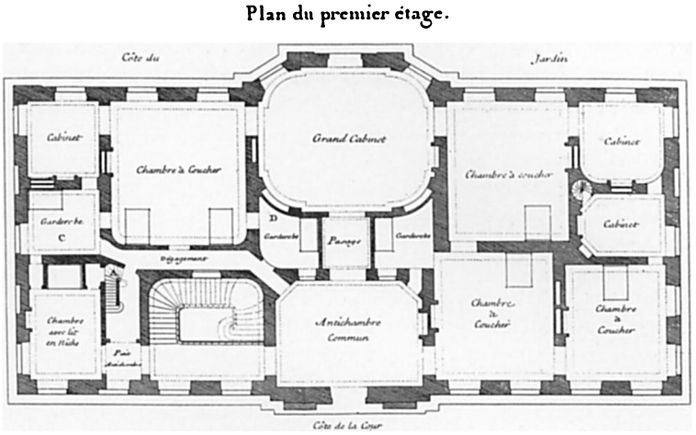
The encapsulated and discrete realm of the (preferably discreet) servant working under a spatial regime of *distribution* gradually gave way to a realm of working pipes, ducts and conduits subjected to a similar spatial marginalization and subordination. The replacement of servants with their inexhaustible, impersonal equivalents in the form of services parallels William Harvey's discovery that blood (re)circulates (Fig. 6), a discovery that was central to the development of physiology. Ivan Illich outlines the importance of the widespread shift in attitudes which accompanied the ensuing 'circulation mania':

> The newness of the idea of circulation is perhaps as crucial for the transformation of the imagination as was Kepler's decision to replace the translucent spheres carrying a luminous planet . . . with the new elliptical orbits traveled by rocky globes.[19] . . . To accommodate circulation, the quivering and symbol-laden flesh of tradition must be recast as a functional system of filters, conduits, valves and pumps.[20]

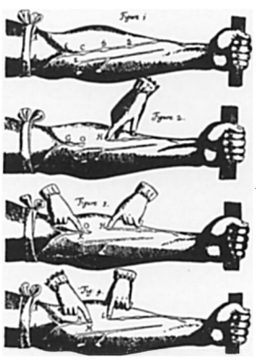
Thus a building no longer merely contains working bodies, but becomes itself a physiological entity – a working body. The dangers of exposing service are no longer merely a social matter, but involve attitudes to the relative decorum of the body's constituent parts.

The earliest building services were, like the pneumatic machines of the second-century Hero of Alexandria, mimetic of *physis*, or reproductive nature. Passages for services are thus seen as analogous to those which contain the various fluids circulating within the human body. Indeed such systems were first employed in the bathroom (Fig. 7), where they ministered directly to the body of the inhabitant. Nicolas Le Camus de Mézières's description of a 'closet of ease' maintained by servants focuses on still fluids, the arrangements of *distribution* necessary for servants to carry out their tasks, and the perfuming works which conceal any shortcomings: 'Shelves will be placed in the corners to hold various vessels, potpourris and scented waters . . . This closet must have a second door leading to a lobby so that the servants may attend to it without passing through the principal rooms of the apartment.'[21] In his description of the new fully plumbed *cabinet à l'anglaise* Le Camus de Mézières marvels instead at moving fluids and at the work being done silently, efficiently and odourlessly within the architectural fabric:

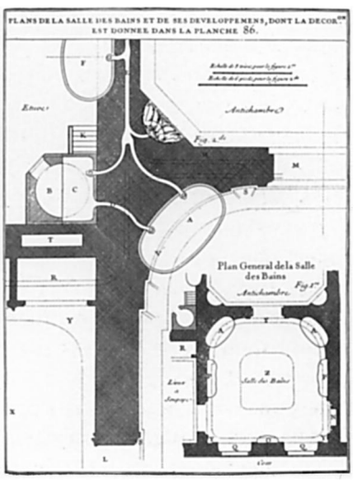
8. Brazil, *Terry Gilliam, 1985.*



5. Project for a country house by J.-F. Blondel, from De la distribution des maisons de plaisance . . . *1737.*



6. Experiments on a bandaged arm, from Exercitatis anatomica de motu cordis, *by William Harvey, 1628.*



A. bathtubs
B. furnace
C. boiler
D. hot-water pipe
E. cold-water supply
F. water tank
H. water pipes to other bathtub
I. basin for hand-washing

7. Plan of a salle des bains, *from* De la distribution . . .

9. Engraving by Pietro da Cortona, 1741, showing the female urogenital system

The bowls are marble troughs to receive the matter, and this is soon washed away when one lifts the plug with its valve and turns the faucet, which gives water in abundance and carries away whatever is in the bowl; the plug closes hermetically, so that odors cannot pass; it is even covered by a little water, so that no vapors may escape. There are also little conduits from which water springs when one desires to wash oneself, a custom that combines cleanliness and health. . . . Water is drawn from [the] cistern to supply a little fountain for washing the hands, which is emptied by an overflow pipe.[22]

Services and the related mania for 'circulation' set in motion the eternal cycle of disappointment and dissatisfaction which, as Tanizaki's writings illustrate, characterizes the cult of 'hygiene'. Though the involvement of diverse experts in 'circulation' threatens to usurp the architect's central role in design,[23] a more subtle but powerful threat lies in the service passages of a building. Analogous to the hidden, internal parts of our own bodies, their breaching elicits the same response of horror and fascination as that of a wound to the body itself (Figs. 8, 9). The architectural devices by which they are concealed (the chief topics of Banham's history) – duct covers, suspended ceilings and propped floors – are a manifestation of our revulsion at this 'other' part of ourselves. Such devices form the visible surfaces of the Tower in Allen's film, which demonstrates the inadequacy of these architectural 'bandages' to contain the life behind them. Thus the building-based disaster movie is the architectural equivalent of the splatter movie.

Towering Inferno focuses on the physical inadequacies of the covers that conceal services. Jacques Tati in his films *Mon Oncle* (1956) and *Playtime* (1968) (Fig. 10) ponders their phenomenal inadequacy. He portrays the interface between servant technologies and those whom they serve as a depthless surface which offers no clues for inhabitation, and receives no patina from use. Tati's taut planes do not respond to the realms between which they lie; they merely offer aesthetic consolation. The discomfiture of Tati's characters in their 'modern' world is rendered more acute by the refractory behaviour of the technology by which they are obsessed, particularly those absurdist devices beloved of Banham: the lift, which frames what it tries to conceal and denies the vertical it seeks to articulate,[24] and the revolving door, a Duchampian icon of futility.[25]

Within building services there lies a living 'other', aligned with the raw, the 'irrational', the female, and with reproductive fecundity, which poses a threat to the male architect. David Lynch's film *Eraserhead* (1976) (Fig. 11) investigates the attributes of this 'other'. Plumbing and electrics dominate the dark, moist industrial environment in which it is set. Machinery, suckling puppies, pipes and the central characters' monstrous 'baby' make noises so similar as to be interchangeable. A theatre opens up behind a radiator, attesting to the imaginative possibilities harbouring in the watery realms of plumbing.[26] But the strongest alignment established in the film is that between plumbing and reproduction. The grandfather of the 'baby' announces a meal from within an alcove across which slams a large right-angle of plumbing.[27] Cast in the role of ancient progenitor, he implicitly proclaims his superior reproductive capabilities in boasting of his prowess as a plumber to the father-to-be – 'Printing's your business, huh? Plumbing's mine! Thirty years. I've seen this neighbourhood change from pastures to the hell-hole it is now. I put every pipe in in this neighbourhood!' A similar right-angled pipe enframes the mother-to-be as her pregnancy is announced: *Grandmother to Father-to-be:* 'There's a baby. It's at the hospital. And you're the father.' *Mother-to-be to Grandmother:* 'Mom, they're still not sure it is a baby.' The oozings of the plumbing system, grown monstrously large, form the backdrop for the father-to-be's subsequent nosebleed, the bleeding of roast miniaturized artificial chickens carved up for supper, and the birth of the monstrous and suppurating 'baby'. In the plumbing, as in the characters, reproductive powers and rushing fluids are out of control. *Eraserhead*'s moist, dark environment is rancidly fecund.

While *Eraserhead* explores the thematic territory of building services, the 'ductwork movie' penetrates their protective carcassing to explore their physical realm. Like *The Towering Inferno*, and self-consciously referring to it in many details, *Die Hard* (John McTiernan, 1988) (Fig. 12) is set within a single building, its action taking place in lift shafts, plant rooms and service voids. Though many films, from *The Third Man* (Carol Reed, 1949) to *Ascenseur pour l'Échafaud* (Louis Malle, 1957) and *Brazil* (Terry Gilliam, 1985), have used service spaces for escapes, entrapments and other such events, *Die Hard*'s plot is worked out almost entirely within this alternative topography. Terrorists enter and besiege the Nakatomi Building through its services, and it is here that they are eventually purged by Bruce Willis. If the building can be conceived of as a body, then the film depicts the workings of a vaccination rather than the staunching of wounds. Contemporary architectural, social and medical anxieties are played out in the service spaces which typify this genre – spaces whose vertiginous vertical drops, extensive horizontals, and mechanical contraptions offer an elastic topography for cinematic action akin to the Arizona landscape in which Roadrunner forever evades the lures of Wile E. Coyote.

10. Playtime, *Jacques Tati, 1968.*

11. Eraserhead, *David Lynch, 1976.*

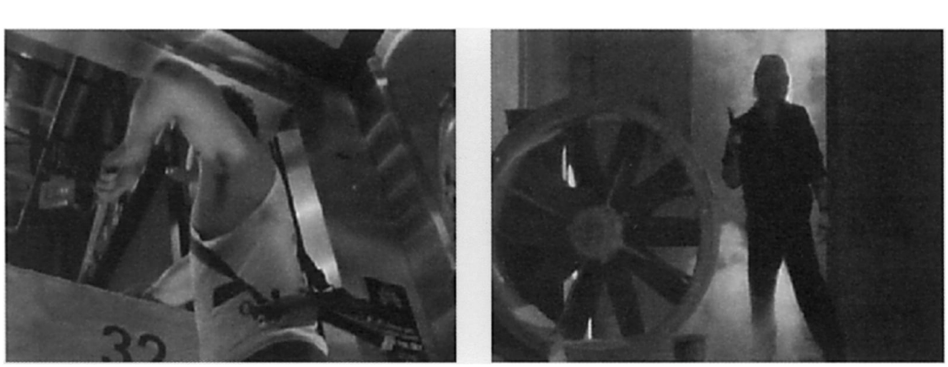
The question remains of how to embody within architecture the relationships between the differing and potentially adversarial realms of the served and the services – the 'over' and the 'under' – which cinema has explored so productively. One strategy is to attempt to deny the differences by camouflaging active services as inert architecture: an attitude which, like Kahn's disavowal of interest, raises suspicions or invites contrary readings. Alternatively, the services can be acknowledged and exposed, though usually this approach also banishes them to the exterior of the building, where any misbehaviour would be less damaging. There are few instances of services having been incorporated into a building without recourse – deliberate or unwitting – to frank (and usually pseudo-functional) exhibitionism or anxious camouflage. Examples would include the radiators in the house Wittgenstein designed for his sister, and the electrical conduits creeping like weeds along the inner walls of Sigurd Lewerentz's flower kiosk at the Malmö Eastern Cemetery. But perhaps the most thoroughgoing attempt is by Victor Horta in the Hôtel Tassel in Brussels (1893–5) (Fig. 13), built for Emile Tassel, a professor of descriptive geometry.

In the centre of the floor in Hôtel Tassel's entrance vestibule there is a perforated brass disc through which air drawn from the garden along a hidden duct and heated under the ground floor rises and then diffuses throughout the building. A short flight of stairs ascends from the vestibule to a landing on which stand two metal 'trees' branching into curved composite steel members that support the stair as it returns overhead. To one side of the landing is a winter garden, its laylight supported on a transverse steel truss, housed on one side onto the curved composite steel member and, on the other, on a plant-like metal console which is reflected in a mirror, to become another 'tree'. On the other side of the landing, the stair rises against a wall graded vertically in colour, from deep to pale orange to white at the top. Painted tendrils or tentacles climb this wall towards a laylight over the stair, crossing rectangular-section applied strapwork which runs parallel to its stringer. Real and reflected spaces open orthogonally and obliquely off the winter garden / landing / stair territory. Curvilinear balustrade elements cross vertical balusters and transform into stencil-work on walls. The vertical gradations of wall colours and of natural light dropped from laylights are counterpointed by clusters of artificial lights which turn, at their lowest extremity, into stamen-like protrusions twisting in every direction. This opened-up region forms the building's heart, but is more than simply an architectural tactic to bring light into a long and narrow site: it is, metaphorically, a garden.

Tensions and transformations between the 'natural' and the 'architectonic', between forms of growth and forms of stasis, between ductile and additive, are present in much of Horta's work, but here they are played out on a larger thematic field. In configuration and details it represents a dialectic between the Bergsonian principles of *élan vitale*, or the order behind change, and the fixities of architectonic structuring – a dialectic of being and becoming. Both the iconography of the servicing elements and the way in which they function play a role in this dialectic.

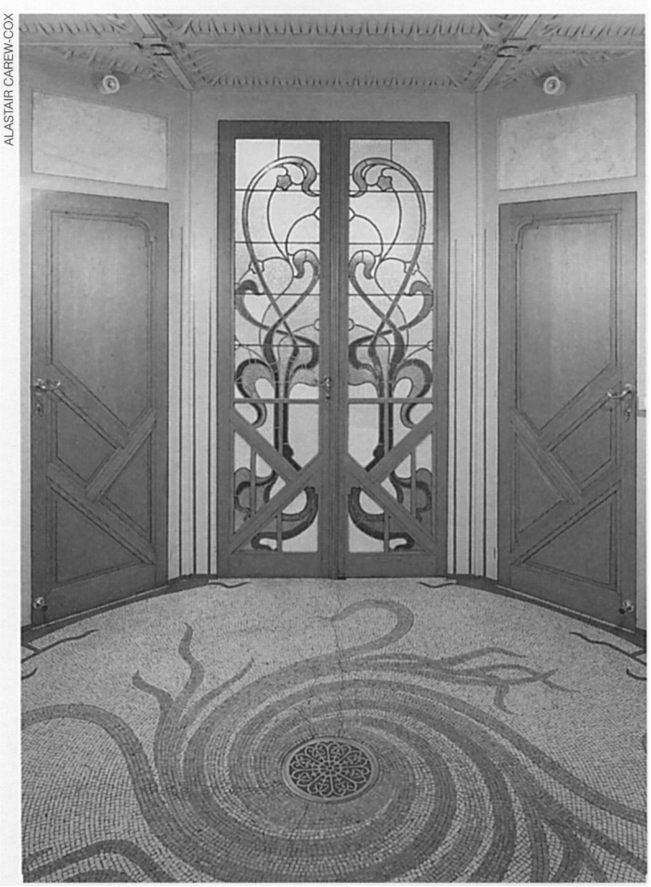
The brass disc in the vestibule is at the centre of an elaborate mosaic of yellow-to-orange curved lines spiralling outwards, licking into whiplash shapes at their ends. Similar curving lines are picked up in the floor and wall patterns and in other details, encountering, or existing simultaneously and in tension with, plain rectangular bands along structural frame lines and at spatial thresholds. This mosaic supports a number of different but compatible readings:

- The spiralling whiplash figures are flames, alluding to the process by which the outgoing air is heated and, in their turning and branching, to its subsequent spread through the building. The use of fire in the Freemasons' initiation rites would also have been familiar to Tassel, and to Horta, both of whom were Freemasons, as were many of Horta's other clients. This 'fire' in the vestibule forms an apotropaic boundary to the city and initiates the subtle hierarchy of spaces through which visitors penetrate the house in stages according to their intimacy with its owner. In the mezzanine area, which was used for the projection of lantern slides and as a smoking room, the fire in the disc immediately below is recalled in the form of light and smoke.
- They are winds, or moving air currents. Eight of them, obeying the Coriolis effect as they seemingly rise, represent the hot air outlet's role as a modern tower of the winds, while the turning and branching mosaic figures describe the air's subsequent movement through the spaces of the house.
- They are octopus tentacles. The poet Emile Verhaeren (one of the industrialist Ernest Solvay's circle, which also included Horta and Tassel) published *Les Villes tentaculaires* in 1895, the year of the Hôtel Tassel's completion. Verhaeren's tentacular vision concerned the mutual entanglement of technology and of nature's 'tumultuous forces':[28] 'Tout est capté dans une infinité de rets, que serre ou distend l'immortelle matière.'[29]
- They are plant-like tendrils, the source of the stencil-work and ductile detailing already described, which grapple with the architectonic structure in a dialectical embrace.



12. Die Hard, *John McTiernan, 1988.*

ARCHIVES MUSEE HORTA, SAINT-GILLES (BRUSSELS)



ALASTAIR CAREW-COX

13. Hôtel Tassel, Brussels – Victor Horta, 1893–5. Views of staircase and entrance vestibule after restoration.

Whether flame, wind, octopus or invading plant-life, the hot-air-outlet mosaic sets up a dialectic which Horta develops both in the material structure and the decoration of the building and in its lived and metaphoric topography. He aligns the seemingly self-willed permeation of heated air throughout the building with the forces of nature (expressed in organic lines, ductile materials and other architecturally transgressive elements), which entangle the architecture and set up the 'garden' thematics in the centre of the house. For Horta, heating technology is not a neutral element which can simply be inserted into the building, but an active participant in its physical and metaphoric structuring.

It is interesting that building services are rarely restored to their original form and way of working, being instead replaced, upgraded and modernized. Despite Jean Delhaye's sensitive restoration of the Hôtel Tassel, the original heating system has been replaced by a modern system of radiators, and so the original role of the brass disc and its mosaic surround cannot be fully experienced.

Horta accepts the 'otherness' of services and allows them to 'play' with the architectural within a metaphoric structure. Kahn also uses metaphor in his efforts to come to terms with services, but does so in order to control them. His output charts a consistent attempt to reconcile the general and the particular, manifested in his work as a series of tensions between, for example, monumentality and change, the overall idea and the particular situation, and – in his writings – lapidary statements and detailed comments. Kahn attempted to relate the two by means of systems, organizational schemata, or the 'diagram', as is reflected in his approach to the role of services in architecture.

In Kahn's designs for domestic buildings such as the housing work commissioned by the federal government in the 1930s and the later commissions for private houses, work is segregated from other domestic activities. In spite of Kahn's love of ruins, and his fascination with the idea of his own buildings as ruins of the future, this implied barrier seems to suggest a fear of the ruination that might be caused by elements which are out of place:

> To keep house is practically impossible if room is not provided for untidy work or storage. Architects may have succeeded in developing closely knit actual space for living, but this very space becomes bedlam when the bicycle and the baby carriage must be stored in the living room, the laundry washed in the kitchen and the chair repaired in the bedroom.[30]

Kahn's solution, similar to the *dégagement* of the eighteenth century, was to create a cluster of working spaces. But as his commissions began to grow in size, and flexibility of use became a consideration, the principles of good housekeeping would no longer suffice.

One of the conditions of the brief for the Yale University Art Gallery of 1951–3 (Fig. 14) was that the spaces should be adaptable and capable of subdivision. In a published interview about his response to this requirement, Kahn again shows how his fear of disorder played a role in his design: 'A good building is one the client cannot destroy by wrong use of space. Almost all the partitions are movable, so whenever the space is needed for something else, they can fit the space to suit their need without ruining anything.'[31] In order to distribute services from a central core into the gallery's flexible spaces, he transforms the ceiling into a duct void, which he conceives of as a bodily organ: 'It's beautiful and it serves as an electric plug and as a lung. It breathes. Air is forced in through these vent pipes and through the corrugations in the ceiling.'[32]

Although the gallery ceiling was in fact built as a system of skewed

concrete beams with tetrahedral propping (which in practice limited its usefulness for services distribution), the space frame conception behind it had originated with his colleague Anne G. Tyng. Influenced by d'Arcy Wentworth Thompson and Buckminster Fuller, Tyng was fascinated by biological structures, of which she produced schematic representations in the form of three-dimensional geometrical matrices. Whenever a new commission came into the office, she would respond with a polyhedral close-stacking diagram which Kahn subsequently strove to reconcile with the client's requirements. What attracted Kahn was the association of Tyng's forms with the flexibility and versatility of living organisms, but their geometry proved stubborn: emblematic of adaptability, in practice they were resistant to flexible planning. Thus, despite the proliferation of such schemes in the early stages of their projects, Kahn could never bring himself to build one.

At the same time as the Yale gallery, Kahn and Tyng collaborated on a design for the city hall of Philadelphia, a vast polygonal framework about which he wrote: 'Structures should be devised which can harbor the mechanical needs of rooms and spaces. . . . The pattern of possible vertical open shafts through the structure is regular, and several additional shafts would appear on further study of the plumbing and other mechanical needs.'[33] But he does not seem entirely convinced that further study *would* be fruitful. The polygonal structure contained no verticals, and finding 'vertical open shafts' would have entailed seeking out vertical alignments of irregular holes, rather than using the true 'nature' of the structure.

Another factor militating against actually building such a structure is its irreconcilability with Kahn's search for the foundations of architecture. A more helpful metaphor emerged in discussions with his client for the Salk Institute, the virologist Dr Jonas Salk: 'It all comes from what Dr Salk called the *mesenchyme* space. One serves the body, and one is the body itself.'[34] Though this is not strictly true, we can see why Kahn is so excited. As an organism, the human body engages with the environment (that is, that which is not itself) in two places: externally at the ectoderm, and internally at the endoderm. The most obvious meeting-place with the external environment is the skin, while the internal environment, composed of ingested material such as food and drink, is encountered primarily at the oral–anal canal. The space between is the mesoderm.

Thus the body meets the environment in layered, sheet-like surfaces, which in Kahn's model correspond to the external and internal skins of a building. The mesoderm, which contains muscle, fat, organs, bone and vessels circulating blood, lymph and other fluids, is more variegated. The mesenchyme metaphor enabled Kahn to hide these diverse living parts of the body ('dead' bone was an exception whose concealment was not one of his concerns) behind conventionally architectural surfaces. These 'servant' elements could therefore be subsumed into the primary elements of architecture itself: the column (nascently in the Trenton bath house), the floor (Salk Institute), the ceiling (Yale University Art Gallery), the tower (Richards laboratories) and even stone ('In Gothic times, architects built in solid stones. Now we can build with hollow stones.'[35]). In this way the services were prevented from acting as a radical and threatening bodily 'other' and became players in Kahn's monumental compositions.

Kahn accepts the 'otherness' of building services by thinking of them in metaphoric terms but does not give them licence to usurp the pre-eminent role of architecture. This metaphorically conceived 'body' is, however completely identified with architecture itself, and its working parts ordered to stay hidden behind unblemished 'architectural' inner and outer skins.[36]

A little comforted by the thought that she was doing only what the kings and queens of France had once done, Helen relaxed enough to relieve herself. However unpleasant it was, she reflected, it was better than risking a horrible death in the washroom.[37]

The heavily serviced building is a closed world in which 'architectural' elements coexist uneasily with the 'nature' that is embodied in services. The 'green' building, which works with the external environment rather than this internal 'other', is less of a self-sufficient microcosm and more like an animal in its reciprocal relationship with the outside world. In more complex buildings, such animal-like strategies require the intervention of some kind of intelligence – a computer-based building-management system.

When released, the film based on Philip Kerr's novel *Gridiron* will take the 'drama-within-a-tower' genre one stage further. The inhabitants of *Towering Inferno* are trapped in their tower and those of *Die Hard* are besieged. In *Gridiron* they are terrorized by the building itself, whose artificial brain has turned malevolent. The tower is out of harmony, its *feng shui* unpropitious, and it begins to rebel: the aromatizer manufactures and circulates faecal-smelling air, and the atrium's player-piano stops playing its usual light classics and opts instead for Schoenberg. The building's computer, programmed to learn and to evolve, has been infected by a video game. When it begins to play the game it deploys the full range of the building's services – most cruelly and effectively those in the bathrooms – to harass and finally destroy the 'enemy', its occupants.

Gridiron features scenes of retributory violence which are worthy of any disaster or ductwork movie, but its central anxiety is subtly different. The book's intelligent building – endowed with a brain but lacking a conscience – becomes a competing being whose unfathomability makes it a more radical danger than the low-grade forms of life constrained within building services. Rather than the 'otherness' of the body and its forces, *Gridiron* ponders the threat that the artificial mind poses to individual identity.

Although the towers in *Towering Inferno* and *Gridiron* were created with technological bravura, the appropriate response to their ensuing dramas would be a deeply grounded technophobia. No amount of physical defences can furnish protection from buildings which are so out of control. But rather than attempt to silence with enthusiastic ignorance, phobic mistrust or misplaced prudery the forces residing in building services – forces which find such captivating expression in the disaster movie – perhaps we can, like Horta, find new ways of establishing a dialogue with them.

SIR JAMES STIRLING

14. Yale University Art Gallery, New Haven, Connecticut – Louis Kahn, 1951–3.

15. Towering Inferno.

This essay is based on themes from the AA General Studies lecture series *Construction and Destruction in Film* given by the author in 1995/6. It originated in a lecture given in 1993 at *Alchemy*, the Biennial Oceanic Architecture and Design Student Conference in Adelaide, Australia. Many thanks to the organizers of *Alchemy*, and in particular to Eoghan Lewis.

Notes

1. Kahn, 'On Things Disliked', from 'Not for the Fainthearted', *AIA Journal*, vol. 55, no. 6, June 1971, pp. 25–31.
2. Many words associated with services have an active connotation, such as 'duct', 'conduit' (whose origins lie in the verb 'to lead'), 'riser', 'run', 'way'.
3. 'When danger or pain press too nearly, they are incapable of giving any delight, and are simply terrible; but at certain distances, and with certain modifications, they may be, and they are delightful, as we every day experience.' Edmund Burke, *A Philosophical Enquiry into the Origin of our Ideas of the Sublime and Beautiful* (London, 1757), pp. 39–40.
4. *The Poseidon Adventure*, the first of Allen's many disaster movies, takes place within the enclosure of an overturned ocean liner, and his television movie *Hanging by a Thread* within that of a cable car. His television series *Voyage to the Bottom of the Sea*, *Lost in Space* and *Swiss Family Robinson* launched cinematic experiences of exemplary solitude, from *Alien* to *Apollo 13*.
5. Publicity for *The Poseidon Adventure* posed the question: 'Who will survive?' *The New York Times*'s review of *The Towering Inferno* (20.12.95) proposed the answer: 'assorted characters whose life spans conform roughly to their billing: actors at the head of the cast live longest.'
6. Irwin Allen, in: Ray Milland, 'Glamour and Catastrophe', *Films and Filming*, vol. 21, no. 12, September 1975, p. 16.
7. For several hours it was unclear whether the explosion at the World Trade Center in New York in 1993 had been caused by a bomb or by a services malfunction.
8. See, for instance: Giorgio Vasari, *Lives of the Painters, Sculptors and Architects* (London, 1963), vol. 3, p. 106, on the seamlessness and multimedia illusionism of Giulio Romano's Sala dei Giganti in the Palazzo Te in Mantua.
9. Tanizaki, *In Praise of Shadows*, first published 1933–4 (London, 1991), p. 15.
10. Victor Hugo, *Les Misérables*, (London, 1982), p. 1067.
11. Hugo, ibid., p. 1071.
12. Donald Reid, *Paris Sewers and Sewermen: Realities and Representations* (Cambridge, MA, 1991), pp. 9–17.
13. 'The underground galleries, organs of the large city, would function like those of the human body, without revealing themselves to the light of day. Pure and fresh water, light, and heat would circulate there like the diverse fluids whose movement and maintenance support life. Secretions would take place there mysteriously and would maintain public health without troubling the good order of the city and without spoiling its exterior beauty.' Baron Haussmann, *Mémoire sur les eaux de Paris* (Paris, 1854), pp. 52–3, in: Reid, ibid., p. 29.
14. 'If I was able to enter the sewers, handle putrid matter, spend part of my time in refuse heaps, and live in some sense in the midst of what society closets off as most abject and disgusting, without scandalising anyone, why should I be embarrassed to take on a cloaca of another sort (a cloaca more filthy, I admit, than all the others), in the justified hope of doing some good, by examining it from all sides?' A.-J.-B. Parent-Duchâtelet, *De la Prostitution dans la Ville de Paris* (Paris, 1837), vol. 1:7, in: Reid, op. cit., p. 23.
15. Reyner Banham, *The Architecture of the Well-Tempered Environment*, second edition (London, 1984), p. 9.
16. Banham refers to one historical moment before his chosen period, in a passing mention of the Adam brothers, whose use of *dégagement* he describes only as 'ingenuity'. Ibid., p. 22.
17. These arguments have been treated in exemplary fashion by Richard Sennett in *The Fall of Public Man* (London, 1986), and by Annik Pardailhe-Galabrun in *The Birth of Intimacy* (Cambridge, 1991).
18. Its shades of meaning include 'freeing', 'releasing', 'disencumbering' and 'escaping'.
19. Ivan Illich, *H_2O and the Waters of Forgetfulness* (London, 1986), p. 40.
20. Illich, ibid., p. 42.
21. Nicolas Le Camus de Mézières, *The Genius of Architecture; or, the Analogy of that Art with our Sensations*, first edition 1780 (Santa Monica, CA, 1992), p. 121.
22. Le Camus de Mézières, ibid., p. 122.
23. See, for instance: Anthony Vidler, *The Writing of the Walls* (Princeton, NJ, 1987), pp. 51–72.
24. See: David Bass, review of *Vertical – Lift, Elevator, Paternoster: A Cultural History of Vertical Transport*, in: *AA Files* no. 29, Summer 1995, pp. 97–8.
25. See: *Le macchine celibi*, edited by Harald Szeemann (Milan, 1975), for further discussion of such 'bachelor machines'.
26. David Lynch has spoken of the similarities between plumbing and making movies, and supported work on *Eraserhead* by installing water heating systems.
27. Echoing the right-angle of plumbing in Don Siegel's *Invasion of the Body Snatchers* (1956), which accompanies the discovery of the seed-pods in which 'human beings' are hatched by aliens.
28. Verhaeren published *Les Forces Tumultueuses* in 1902.
29. 'Everything is harnessed in an infinity of nets that immortal nature compresses or distends.' Verhaeren, *Vers le Futur*.
30. Louis Kahn, '"Standards" Versus Essential Space: Comments on Unit Plans for War Housing', *Architectural Forum*, vol. 76, no. 5, May 1942, pp. 308–11.
31. Kahn (6.11.1953), quoted in: Patricia Loud, *The Art Museums of Louis I. Kahn* (Durham, NC, 1989), p. 84.
32. Kahn (6.11.1953), quoted in: Loud, ibid., pp. 82–4.
33. Kahn, 'Towards a Plan for Midtown Philadelphia', *Perspecta 2*, 1953, pp. 10–27.
34. Kahn in conversation with Peter Blake (20.7.1971), quoted in: David Brownlee and David De Long, *Louis I. Kahn* (New York, 1991), p. 332.
35. Kahn, 'Towards a Plan for Midtown Philadelphia', op. cit. This quote recurs in Kahn's 'Not for the Fainthearted' (see note 1).
36. John Outram follows a Kahnian policy of 'hollow stones', and similarly identifies the places for the working parts of buildings with the primary elements of architecture itself. Outram, however, explicitly acknowledges and expresses the fact that the architectural members of his 'robot order' are performing acts of work. For a more detailed discussion of how Outram develops and transforms Kahn's stance, see: David Bass, 'The Robot Colony', *Blueprint*, September 1995, pp. 44–7.
37. Philip Kerr, *Gridiron* (London, 1995), p. 266.