Miasmic ruptures and the fear of a permeable interior

Materials erode, sag, peel, fade and fray. Such indications of decay can act as visual cues, telling of both the passage of time and the care expended on an object or surface.

Dust indicates that a surface has been undisturbed for a long period. A patina on a particularly delicate object can show either use or neglect [Can be found to be either aesthetic or displeasing: Ruskin’s references to “The Golden Stain of Time”]. Some visual disrepair hints at more serious structural faults: a cracked wall, for instance, might indicate a subsiding foundation. While not all of the manifold effects of entropy upon our constructed environments mean something about the structural health of the building, there are occasions when the visual signs of aging intersect with wider anxieties about the health of the body politic to attain the status of symptoms—indicators of a deeper malady in the social order, uncanny signs of external social conflict within the domestic home. The history of the miasmic rupture in 18th century interiors provides an excellent case study of such collectively construed imaginary threats. It not only allows us to examine the trajectory of such anxieties, but is also crucial for understanding the evolution of ‘rational’ interior design throughout the eighteenth and nineteenth centuries.

In Althusserian terms, we can see the mass phobia of miasma holes as an instance of overdetermination. Overdetermination refers to social phenomena that have multiple sufficient causes that coalesce in a single symptom, one that is triggered by an accidental event or made manifest in an arbitrary form, but retrospectively appears inevitable. Miasmic ruptures are an example of such an arbitrary, ubiquitous phenomena that was overfreighted with meaning. The symptomatic meaning ascribed to miasmic ruptures was already latent in a society bedeviled by rapid urbanisation, overcrowding and epidemics. Just as consumption, a medical condition, was also ascribed a moral meaning, an indicator that the victim was ‘to pure’ for an impure world, miasmic ruptures were taken as a sign that this impure world was bursting into a permeable, weakly defended domestic interior. Latent anxieties about symbolic defilement through personal contact, whether brought about by the mixing of the social orders or the excessive proximity of family members, also sought expression. The miasma hole, then, did not require strong scientific evidence
in order to be identified as a cause of illness. Rather, it merely had to accommodate the many weak inferences that congealed around it.

To reiterate: in light of Althusser’s observations about overdetermination in social politics, the role of the miasma hole in domestic interiors comes to appear as both inevitable and arbitrary. If the miasma hole had not embodied the phobias of the eighteenth century so well, something else would have played the same role, indeed as (under changed social conditions) other phenomena later did. A contemporary equivalent of the anxieties attached to miasma holes can be found in the malaise called sick building syndrome—although this topic sits outside the scope of this paper.

A ‘miasmic rupture’ is a perforation in the paint or wallpaper that seals a wall. The majority of eighteenth century domestic spaces were painted in lime washes, porous alkali coatings that allowed water trapped in the walls to transpire. Those buildings that had permanently wet foundations would sometimes find water wicking its way through the interior walls. At the point where such a spontaneous capillary met the air, mineral deposits left behind by the evaporating water would form calciferous blooms, irregularly shaped discoulourations and blisters in the wall’s surface. Miasmic ruptures could be found either singly or in multiples and were considered a kind of architectural disease, not unlike the eruptions of the skin such as measles, pox and shingles.

Much like the early 20th century epidemic of ‘neurasthenic breakdowns’, the “miasmic rupture” refers to a condition that is no longer diagnosed — what would previously have been considered a dangerous rupture would now offhandedly be referred to as peeling paint.

In the eighteenth century, however, the presence of such moisture was not considered innocuous. The vapour theory of disease held that moist air was directly injurious to health. The smell of decay was not merely an indicator of decay, but was an immediate cause of illness.

> “In the now vast literature on understandings of epidemic diseases and fevers from the Back Death to the late seventeenth century, one constant is the perceived threat of foul vapors released from decaying matter and from stagnant water”¹

The presence of a miasmic rupture was understood in the eighteenth century to indicate that a vapor had forced its way from the interior of the wall and penetrated into the room, where it might spread disease. As such, the concern with miasmic ruptures can be considered an intuitive forerunner to contemporary microbiology and epidemiology. Theories about miasmas therefore occupied the ambiguous space between proto-science and pseudo-science that can only be retrospectively resolved.

> Pre-Pasteurian orthodoxy held that sickness arose from pestilential miasmas given off by the environment, by towns, and by their fetid populations. Stench was, in fact, disease.”²

The result of this orthodoxy was a hard fought battle against mephitic vapours of all kinds. As Rodolphe el-Khoury has written, ‘The eighteenth century was very keen on the sanitary ‘coating’ of its surface, especially when the miasmic threat reached its peak in the 1770s.’³

Concerns regarding miasmas were crucial to the development of consensus regarding rational domestic interior spaces, and could even be ascribed some responsibility for the evolution of the neo-classical style.

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³ el-Khoury, Rodolphe, Polish and Deodorize. In Drobnick, Jim, The smell culture reader. (New York: Berg, 2006), 22
However understanding these coatings, and the arrangement of domestic interiors that accompanied them, requires some investigation into the way that the pathogenic behavior of miasmas was imagined.

**Miasmas in the 18th Century City**

A miasma is a cloud that brings disease. In ancient Greece it was considered a divine curse, sent upon a city as punishment for a tragic (and implicitly political) sin, such as the plague that afflicted Thebes for Oedipus’ crimes of patricide and incest. By the seventeenth and eighteenth century, shorn of its explicitly theological connotations, a miasma was seen as the result of vapours from decomposing organic matter (*miasmata*) that could cause cholera and other diseases.

Scientific discovery, philosophic fashion and social context transform the way in which we see phenomena. It would seem at first blush that all that the Enlightenment view of miasmas shared with the ancient Greek was a loan word and an urban context. However the fears associated with miasmic ruptures—or, as they were otherwise called, mephitic vapours and telluric emanations—still retained something of the classical concern with defilement by proximity. While the causal nature of this defilement was understood in the vaguest terms, confused and conflicting accounts only aided the development of a collective hysteria.

> Stenches were thought to corrupt and putrefy and generate plague in those most vulnerable to infection. The air literally reeked of death... No real distinction was made between airborne spread and contact, as both terms referred to the passing of a poison or taint and both were used interchangeably. Miasma was thought to lurk and be transported in victims’ clothes, in their baggage or to be spread through their foul breath.

The possibility of death through a non-tangible, transparent entity could send the 18th century imagination into overdrive. As Rudolphe el-Khoury vividly describes:

> In the Parisian imaginary, the subterranean soil amounted to a gigantic reservoir where the remains and waste of past generations precipitated into a horrific brew. Under the street thus lay the excremental past of the city, ready to burst forth again at any opportunity: a fissure in the ground, the digging of a well, an excavation for a building’s foundation.

The situation did not improve with industrialisation. During the great stench of London in 1858, pedestrians involuntarily participated in collective vomiting in public spaces along the Thames River, and it was suggested that the Parliament be moved out of the city. The great urban stench shared common causes with the epidemics that periodically tore through cities—namely, overburdened or non-existent public infrastructure and poor personal hygiene. However it bears emphasizing that what caused public hysteria was stench itself.

> The phase in Western Europe from the later medieval period to the second half of the eighteenth century paid witness to a relatively gradual reduction in levels of tolerance for faecal smells... from the mid-eighteenth century onwards, the process of reducing tolerances for such odours became much more rapid and intense [...] Tolerances of many types of odour, such as stenches emanating from prisons or graveyards, were reduced because they were held to be threatening to health.

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How to prevent Miasmic Ruptures

Viewed against the background of the general fear of mephitic vapours, the typical 18th century interior reveals itself to be a sophisticated technical apparatus designed to prevent telluric emanations from reaching a building’s inhabitants. el-Khoury describes the mechanism of contamination in interesting detail:

Much like the soil that held the excremental history of the city, walls were known to absorb and retain the noxious vapors of the surrounding air. The persistence of this miasmic impregnation was noted by many “observers” who recognized a lingering odor emanating from surrounding walls years after its actual source had been removed from the space. The revetment was thus needed to shield the permeable wall form external influences as much as to contain the ascending ramifications of the miasmic earth.8

Read against this example, Althusser’s concept of overdetermination presents itself as particularly apt. Althusser had borrowed overdetermination from Freud’s The Interpretation of Dreams, where Freud used the term to describe the peculiar return of repressed material in the form of obscure symbols, usually mundane objects repurposed from the detritus of the memories of the day. The repressed came back, as it were, in the cloak of the banal. Likewise, telluric odors, the invisible emanations of the gross and the earth bound, presented a kind of ‘spirit extract’ of utterly dead organic material. Wicked from the earth and through the walls, the houses they afflicted (and, in principle, they afflicted all houses) were quite literally haunted by the dead.

According to this reading, the calciferous roses of mephitic rupture occupied the same space in the late eighteenth and early nineteenth century imagination that the figure of the vampire subsequently took over and even expanded. That is, a foreign disease-bearing visitor who forces their way into a vulnerable domestic interior from the wasteland world of the past, the dead and the decomposing.

The utmost needed to be done to prevent these sick-making emanations from exiting the underworld. We owe paved roads and sidewalks outdoors to strict government regulations. Wallpaper and indoor wall paint were a private manifestation of matters of public concern:

The paving imperatives thus extended to the walls: they had to be sealed at the surface. Otherwise, the mephitic sap that their porous sections incessantly drew through the foundation would be released into the atmosphere.9

The most ubiquitous of these technologies was paint, either in the form of limewash or distemper. Traditional limewash was admired for its caustic sterile properties, but due to its porous nature it offered only a temporary respite from miasma holes. Distemper, containing a portion of animal glue, was somewhat less permeable. As noted above, it was precisely the capacity of paint to breath that enabled miasma holes to develop in the first place.

In wealthier households, wallpaper predominated as a solution of choice. Thick, ornamental paper was usually hung above a dado, or waist-high paneling, which itself helped conceal the stains of rising damp. The thicker the paper, the more effectively it was held to do its job.

Mathieu Géraud argued that the thick wall tapestries of medieval interiors were better suited to this double task than modern wall papers and fabrics, which he considered far too flimsy and dangerously permeable10

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8 el-Khoury, Rodolphe, Polish and Deodorize. In Drobnick, Jim, The smell culture reader. (New York: Berg, 2006), 26
9 el-Khoury, Rodolphe, Polish and Deodorize. In Drobnick, Jim, The smell culture reader. (New York: Berg, 2006), 26
10 el-Khoury, Rodolphe, Polish and Deodorize. In Drobnick, Jim, The smell culture reader. (New York: Berg, 2006), 26
Mere thickness, however, was not universally approved of, for fear that thick surfaces too could become the repository of poisonous fluids. The smoother the surface, the better it was believed to protect the air that it came into contact with:

*Since smooth surfaces made it easier to control flows, it was quite logical to acknowledge the advantages of enamel and varnish, which air and water slid off unhindered*[^1]

Following on from this fetishisation of thickness, smoothness and impermeability was a logical hierarchy of interior materials. For the wealthiest citizens the ultimate defense was stone, and the most desirable of all was marble. Whereas we normally assume the appeal of marble is aesthetic, in previous centuries a large part of its appeal was its smooth cold vitreous surface, that so irrevocably sealed away undesirable vapours, whether in bathrooms or in cemeteries.

Finally, tactical assistance could be provided by aromatics, potpourris and perfumes whose volatile elements might help break up and disperse the earthy influence of the morbidific vapours.

As el-Khoury writes “the visual logic of cleanliness is evidenced in the treatment of the architectural surface, in floor pavements and wall coverings that exhibit a vestimentary ‘visuality’ in the exercise of their professed sanity function.” That is, to draw el-Khoury’s observations to their logical conclusion; just as the collective belief in the pathogenic potency of miasmic ruptures was exaggerated, it called forth an exaggerated material response, an armory of veneers, lacquers, paints, papers, facings and finishings designed to ward off an omnipresent but ill-understood evil.

### The Hygiene of Sleep

As befits its overdetermined nature, the fear of telluric emanations was not so much dispelled, as simply displaced by later fears. By the mid-nineteenth century, the predominant fear was not of the odors of the earth, but rather of even more dangerous moist vesicles: other humans. The family atmosphere, in particular, was taken to be fraught with danger.

*...even without any intrusion from the stench of the masses, ‘the family atmosphere’ could be deadly. The accumulated noisiness of miasmic exhalations, which, by virtue of being related through kinship and heredity, were of the same nature, constituted in itself a morbid menace. [...] As a result of this constant familial ‘miasmic intercourse,’ every house had both its own odor and its ‘specific endemic diseases,’ kept alive by the mephitism of the walls.*[^12]

The most fatal space in this deadly environment was the bedroom. A particularly popular volume of day was Dr. W. W. Hall’s ‘Sleep: or the hygiene of the night’ (1871). In it, the doctor expounded upon the risks accompanying the hours given over to dreams.

*Between the closing of the chamber door at night and its opening in the morning, a third of human life passes away, and upon the manner of its employment the physical, mental and moral character of man largely depends.*[^13]

The threat was posed by moisture. The pores of the skin, constantly releasing catabolic fluids, also absorbed them. A couple in a bed, or even worse, two generations in a bed, would steadily exchange these subcutaneous fluids, leading to the wreckage of homeostasis and health, and the doctor wrote of tragic cases of small children whose vitality was destroyed by the proximity of a sleeping grandparent.

[^1]: ibid.


[^13]: Hall, W.W, *Sleep: or the hygiene of the night.* (London: James W. Ward, 1871), 109

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But if a human body, with its healthful share of electricity or other influence, gives part of it to another which has much less, it gives away just that much of its life, and must die, unless it is recovered in some way; hence the frequent fact, which needs no authority to substantiate, that a healthy young infant, who sleeps with an old person, will wither and wilt and wane and die.  

Even adults were not immune to the baleful influence of other bodies, and it was through the urging of reformers such as Dr. Hall that the practice of married couples sleeping in separate single beds became common. For as Dr. Hall argued, the practice of sleeping in a huddle is one that befits “the vilest, and the filthiest of the animal kingdom—wolves, hogs and vermin’.

Beds, therefore, should fulfill a range of characteristics. They should be solitary and well aired, placed at the centre of the room and raised from the floor. An iron bed was preferably to a wooden one, because wood was more likely to absorb and retain vapours. Even a pitcher of cold water placed in the room could pose a threat, for due to its coldness and power of condensing, “a single pint of water will absorb a pint of carbonic acid gas and several pints of ammonia without increasing its bulk. […] Water which has stood exposed in any human habitation for a single half-hour is too disgusting for use whether for drinking or cooking” (294). The key characteristic of all these invisible threats (whether concealed in the form of water, as electricity or as air borne vapours) is their fluidity, their tendency to cross boundaries that should be kept sacrosanct. As Corbin writes, it can be characterised as a society beset by contradictory paranoias.

It was a society that, torn between fascination for the private refuge and obsession with ‘atmospheric captivity,’ dreamed about ‘air baths’ but snugly shut away its chlorotic daughters and languishing wives.  

The shift in public anxiety from telluric emanations through walls to carbolic emanations from skin only requires a subtle dislocation of beliefs. The overarching theory of disease remains the same—miasmic vapours that cause disease through proximity. The source of the disease changes; instead of the dead outside and below forcing its way up and in through walls, death is caused by a suffocating excess of life in domestic space, by the baleful proximity of those who are already within the circle of the family, already near us. At this juncture, the sealing distempers go from prophylactic barriers to dirt trapping films. A new material would be called for, one that revealed dirt whether it came from within or without, one that generated no new sinister spaces, that exposed itself to inspection, that was hard and impermeable but at the same time transparent and hygienic. This material would be glass.

Vitreous Perfection? The smell of Philip Johnson’s Glass House

This transposition has yet to lose its potency in the rhetoric of hygiene; the myriad of household products still devoted to the maintenance of the shiny/odourless surface testify to the longevity of miasmic mythology in the collective imagery.

It is tempting to believe the fear of miasmas—of mephitic and telluric vapours of all kinds—to have been completely and hygienically dispelled from the interior by Pasteur and the microbial theory of disease. However it is rather the case that the collective imagination has succeeded in overlaying old phobias with new anxieties, a substitution of one cardinal symptom for another, much as wallpaper was layered over contaminated wallpaper in the eighteenth and nineteenth centuries.

\[\text{el-Khoury, Rodolphe, }\text{Polish and Deodorize. In Drobnick, Jim, }\text{The smell culture reader. (New York: Berg, 2006), 26}\]

\[\text{Hall, W.W, }\text{Sleep: or the hygiene of the night. (London: James W. Ward, 1871), 295}\]


\[\text{Ibid.}\]

\[\text{\[...\]}\]

\[\text{Water which has stood}\]

\[\text{kept sacrosanct. As Corbin writes, it can be characterised as a society beset by contradictory paranoias.}\]
If for the 18th century, the ideal hygienic material was marble, in the 20th century it is glass. Cold, hard, smooth, and also transparent. The putative sterility of glassware makes Philip Johnson’s Glass House a canonical example of modernist architectural purity in more ways than one.

*Through the filter of available scholarship, the Johnson house appears distorted into an odourless image of a glass house.*

Philip Johnson’s Glass House is an essay in elegance, minimalism and proportion. Kenneth Frampton, Peter Eisenman, Vincent Scully, Robert A M Stern and Jeffrey Kipnis have all written on it, and it remains a point of reference in contemporary research, a kind of perfection *in vitro*. Although the Glass House is in many respects rational, it can hardly be described as a functionalist, and certainly none of the more intelligent analysis of the building read it as such. The functionalist description of such a building can be dispensed with out of hand, as a ruse that distracts from its more powerful iconographic meaning.

It is worth noting that in the time that the Johnson house was built and first used, the problems posed by odour and disinfecting were again a source of mass anxiety in America. The 1950s marks a period that in some way mirrors the miasma hysteria of the late 18th Century. If our image of 18th and 19th Century urban life is characterized by perpetual dirt and disease, our collective nostalgia for the 1950s is prompted by lemon and other characteristic cleaning odours, by air fresheners and the images of gleaming white goods attended to by diligent housewives. The fantasy of space unblemished and antiseptic is not restricted to advertisers, but shared by architects.

*If the white wall gradually gained a universal appeal, it is primarily because of its visual properties or, more precisely, by virtue of its capacity to translate the olfactory condition of odourlessness into an image.*

Likewise, the floor to ceiling glass walls, transparency, and light make the Johnson Glass House, anachronistically considered, the ultimate answer to mephitic vapours. As we imagine the Johnson house, it is perfectly without odour. All the more surprising then is an excellent account of smell’s contemporary relationship with architecture published in the Architectural Association journal by Professor of Architectural Preservation at Columbia University’s Graduate School of Architecture, Jorge Otero-Pailos. The article published in AA Files by Otero-Pailos comes complete with 3 scratch and sniff panels. Titled *An Olfactory Reconstruction of Philip Johnson’s Glass House*, the article, and odours therein, are based on building materials used in the construction of Johnson’s Glass House in 1949.

Included are materials ranging from newly lacquered wood and shiny stainless steel to fresh plaster. Also included are smells that are representative of social activities that took place within the home, like smoking and cologne wearing. Olfactory elements mentioned in the text include the damp, decomposing bathroom, cooking, cleaning, and finally, the smell of 1950s men (1950s male cologne examples used included: Old Spice, Canoe, Acqua Velva). This process of research in some ways mimics the experiments conducted by public health inspectors in the 19th Century, as Corbin describes them:

*Investigating the air confined and the odors enclosed in the rooms of the house became the major public health project. Authors of manuals now constantly urged detection of the places where private stenches stagnated. New anxieties generated and governed innumerable descriptions of interiors... the descriptions and advice help us to reconstruct the actual smell of the dwellings and the likely source of each odor.*

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An American architectural icon, the intimate details of Philip Johnson’s Glass House can be visualised even by those who may never set foot within it due to the proliferation of images, as well as the various architectural theorists who continue to publish a variety of essays that view the building form all possible aspects. With this article, Otero-Pailos comments on the narrow documentation that only visual details allow:

In sum, during the last 60 years, a corpus of scholarship has grown around the visual dimensions of the Glass House and its role in the social politics of architecture. But we lack documentation about the house’s odours, or how they were managed, cleaned, ventilated and perfumed.22

Jorge Otero-Pailos argues that Philip Johnson was well aware of the risk of contaminating smell, designing two pavilions in order to keep his own living quarters quite separate from that of visiting guests. Philip Johnson built himself a personal biosphere, plus somewhere to confine the ‘other’, in this case, the guest. As an active homosexual in homophobic society, Johnson was a perpetual bachelor who could dispense with the conventional trappings of a domestic interior, but thereby all the better reveal the logical conclusions of the hygiene anxieties of the post-war era.

Glass answers the problems of telluric emanations perfectly. It is preferable to even the freshest whitewashed wall. Unlike a painted wall, diseases cannot ascend behind glass because it has no ‘behind’. Glass is the transparent assurance against miasma from the outside in. It also addresses the implicit fear of incest that lay behind the nineteenth century concerns with excessive proximate contact in the domestic sphere. Glass exposes, and opens up to light, the salubrious luxury of light that both sterilizes and enforces morality.

Coda: Ironically, the glass pavilion with its floor to ceiling transparency was notoriously difficult to air as the large glass panels were fixed, the only opening being the door. Condensation accumulated and ran down the interior surfaces. Furthermore, glass not only exposes, it over-exposes, and Johnson ultimately moved into the guest house—as he famously said “people in glass houses should ball in the basement.”23

Pristine architecture has its bluff caught via visual cue: the window-wall, perfectly transparent but hermetically sealed.

22 Otero-Pailos, Jorg, An Olfactory Reconstruction of Philip Johnson’s Glass House. (UK: AA Files 57, 2008), 40


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Hall, W.W, *Sleep: or the hygiene of the night*. (London: James W. Ward, 1871)


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