Environment bubbles:
Architecture, medicine and media

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Abstract

This paper argues that the role of media in the cultivation of audiences for architecture is much more complex than one of broadcasting architectural achievement to potential clientele and fellow design professionals. Understood in the broadest sense as spaces constructed for inhabitation, architecture is disseminated, produced and received through a much wider set of 'channels' than the design and lifestyle media. In the other direction, architects actively consume all forms of media and have gleaned an understanding of new technologies and scientific knowledge through popular media and culture. In this paper I will focus on medical technologies and knowledge and the relationship between the medical body and the environment as circulated through news media Specifically, the paper will relay three contiguous and historically specific narratives sharing the trope of the environment-bubble. The environment-bubble protects its inhabitant from invisible toxins and bacteria circulating freely in the exterior world by filtering the air of contaminants. The skin of the bubble is transparent, allowing the inhabitant to see and be seen by those outside. This bubble appears in medicine and architecture around the same time and in both contexts cultivates a relationship with the popular media. Each case will be described in turn before reaching broader conclusions.

The environment bubble in architecture

The 1960s saw the emergence of the pneumatic bubble as an architectural motif and ideal. Advocates for pneumatic architectures, such as Charles Jencks, emphasized the liberating potential of portability.[1] For Ant Farm, the ease with which they could transport inflatable structures and the pumps required for their erection in their customized Chevrolet van, signaled the beginning of a new emancipatory architecture of flexibility and contemporary nomadism. Inflatables were proposed as a type of participatory architecture, their success and dissemination, augmented by festivals and conferences hosted in them, but also through videos and the publication of the *Inflatocookbook*.[2] Much

ruminated over in recent historical revisions of that period, their association with political and social change, as well as their links to military technologies and comic books, have been carefully detailed.[3]

There is, though, another theme at work—in which the bubble offers immunity from contaminated environments. This is most clearly articulated in Ant Farm's *Clean Air Pod*, first erected and performed on the University of California Berkeley campus in 1970. Wearing white protective clothing and gas masks, members of the group called on everyone to take shelter from air pollution in the inflatable.[4] While at other Ant Farm events the bubble had Dionysian ambitions, the Clean Air Pod takes its place in a context of paranoia over environmental threats and joins similar sealed environments in science-fiction novels and films featuring such as *Logan's Run* (1976) and *Silent Running* (1972).

Reyner Banham's Environment Bubble or un-house, of 1965—imagined in Mylar and drawn by architect Francois Dallegret—had earlier posited the advantages of the pneumatic bubble as a technique for creating an artificial environment. First announced in Banham's essay 'A Home is not a House', *Art in America* in 1965, and subsequently re-published in *Architectural Design* in 1969, the Environment Bubble was also included in Charles Jenck's *Architecture 2000* (1971) and discussed in Banham's book *The Well-Tempered Environment* (1969).[5] Banham was interested in the idea of a contemporary architecture comprised of "a manufactured environment (conditioned air) with a bag to put it in."[6] He suggests the reduction of the architectural distinction between interior and exterior to a mere change in air quality with the architect's role focused on the provision and organization of plant and bag.[7]

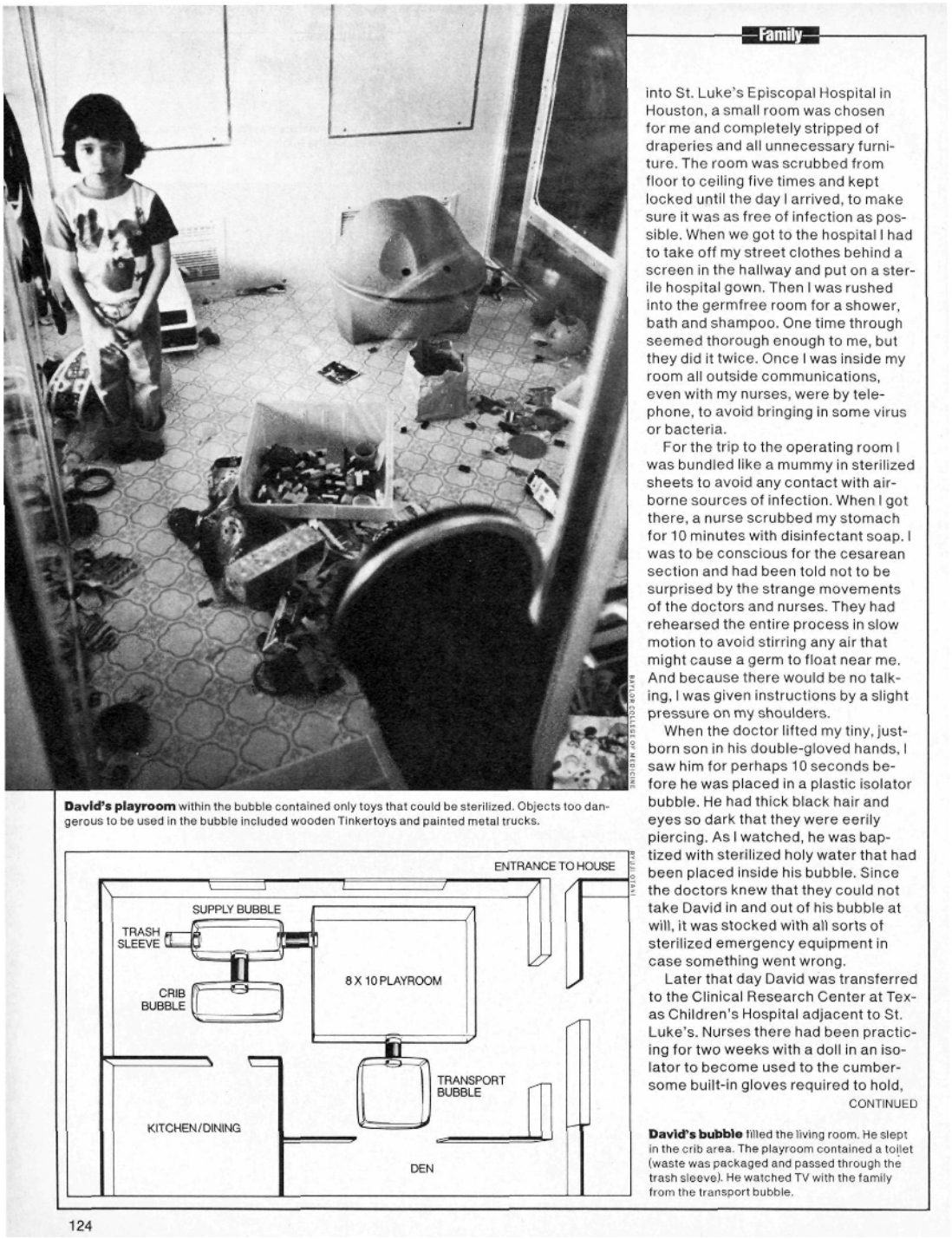
The interior of the bubble is an undifferentiated and generalized space, dominated by the presence of the hardware of modern media, hovering between the repeated, hallucinatory figures of Banham and Dallegret. The need to maintain a connection to television and radio from within the climatically controlled bag of air is present in other contemporary proposals for pneumatic structures. Archigram's Suitaloon, an inflatable, nomadic house cum clothing, appears to be equipped with antennae. In Haus Rucker Co's yellow lung, the occupants wear elaborate helmets that also feature in their Mind Expander series (1967-69). These helmets were intended to provide a mediated experience of the world—filtered air, enhanced or obscured vision, sound track—or, as the titles in their helmet series suggests, an experience of the internal psyche.

The complex relationship between media, and mediated environment and ideas of purification and isolation in a bubble, were more forcefully tested in the context of medicine.

The Bubble-Boy

The second narrative concerns the Boy in the Bubble, a tale of medical celebrity and controversy. There were, in fact, two highly publicized cases of boys confined to sterile bubbles in the 1970s. The first, Ted de Vita, developed severe aplastic anemia, an ineffective immune system in his teens, and was forced to live in a sterile hospital room for 8 years until his death at 18 years in 1980. Ted was able to leave the hospital room wearing a spacesuit and helmet with an air pump that expelled pathogens but the suit drew so much attention that he rarely left his room. The second boy, David Vetter, was born into the bubble in 1971. He had genetically inherited Severe Combined Immunodeficiency (SCID), popularly now known as the "bubble boy disease". His elder brother had died of SCID at seven-months of age, a month prior to David's conception. David's parents, eager to have a son, were encouraged by the doctors at Baylor College of Medicine on the basis that a cure was imminent and that a bone marrow transplant might be performed from his older sister, Katherine. There was no discussion as to what would happen if no cure eventuated.

The techniques for maintaining a sterile environment were developed in the 1960s for the establishment of germfree animals for experimentation and David's enclosure closely resembles in form, material and name, the isolators constructed for rodent colonies. Water, air, food, diapers and clothes were disinfected with special cleaning agents before entering the bubble. Extra glue and labels were removed, the product placed in a chamber filled with ethylene oxide gas for four hours at 60˚C, and then aerated for a period of one to seven days. David was handled only through special plastic gloves attached to the walls. During David's life the circumstances of his bubble-enclosed existence were the subject of considerable scientific investment. In 1977, about $200 000 per year was granted in National Institutes of Health research grants for his care.[8] In addition, NASA engineers built the isolators for his bubble and a $50 000 space suit connected to a pump mounted on a lawn mower chassis, or Mobile Biological Isolation System, that allowed him to venture outside without risk of contamination for up to four hours. It took an hour to transfer him in and out of his bubble and he did so just five times before outgrowing the suit.



Family

into St. Luke's Episcopal Hospital in Houston, a small room was chosen for me and completely stripped of draperies and all unnecessary furniture. The room was scrubbed from floor to ceiling five times and kept locked until the day I arrived, to make sure it was as free of infection as possible. When we got to the hospital I had to take off my street clothes behind a screen in the hallway and put on a sterile hospital gown. Then I was rushed into the germfree room for a shower, bath and shampoo. One time through seemed thorough enough to me, but they did it twice. Once I was inside my room all outside communications, even with my nurses, were by telephone, to avoid bringing in some virus or bacteria.

For the trip to the operating room I was bundled like a mummy in sterilized sheets to avoid any contact with airborne sources of infection. When I got there, a nurse scrubbed my stomach for 10 minutes with disinfectant soap. I was to be conscious for the cesarean section and had been told not to be surprised by the strange movements of the doctors and nurses. They had rehearsed the entire process in slow motion to avoid stirring any air that might cause a germ to float near me. And because there would be no talking, I was given instructions by a slight pressure on my shoulders.

When the doctor lifted my tiny, just-born son in his double-gloved hands, I saw him for perhaps 10 seconds before he was placed in a plastic isolator bubble. He had thick black hair and eyes so dark that they were eerily piercing. As I watched, he was baptized with sterilized holy water that had been placed inside his bubble. Since the doctors knew that they could not take David in and out of his bubble at will, it was stocked with all sorts of sterilized emergency equipment in case something went wrong.

Later that day David was transferred to the Clinical Research Center at Texas Children's Hospital adjacent to St. Luke's. Nurses there had been practicing for two weeks with a doll in an isolator to become used to the cumbersome built-in gloves required to hold,

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David's playroom within the bubble contained only toys that could be sterilized. Objects too dangerous to be used in the bubble included wooden Tinkertoys and painted metal trucks.

David's bubble filled the living room. He slept in the crib area. The playroom contained a toilet (waste was packaged and passed through the trash sleeve). He watched TV with the family from the transport bubble.

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Figure 1. A page from 'David's Story', showing the plan of the isolator in the Vetter's home following David's transfer from hospital at age eight. (Kent Demaret and Carol Ann, 'David's Story', *People Weekly*, October 29, 1984, p. 124).

Towards the end of his life, the U.S. government spoke about cutting the research funding as it showed no results and there was a growing debate over the ethics of the experiment. The doctors attending to David saw the situation as one that would advance science and expressed no regrets. Indeed, one of David's doctors told the press that

David's greatest contribution medically was his death, as through autopsy researchers learnt how to repair the immune systems of other children with the same affliction.[9] Analysis of blood samples taken from David located the exact gene where his congenital disease was located. Public opinion was less supportive of the project. After his death, Raymond Lawrence, the chaplain of the hospital during David's first four years wrote "the medical team as a whole had not given serious thought to the broadly human implications of continued life in the bubble . . .he was the first human being to live 12 years in a sterile chamber, his was the first true laboratory life. He was a guinea pig."[10] The medical profession rejected culpability and blamed the parents "who produced the child", arguing that "the physicians could not forbid conception even if they had wished to" and noting that the parents had refused the offer of an abortion.[11] Lawrence recognized that even if a cure had been found for David, his "perception of reality was seriously distorted . . . for example, he could not believe that the buildings he saw from his hospital room actually had another side to them, with windows."[12] In fact, while in the media he was described as 'plucky', David became psychologically unstable, anxious and depressed primarily due to the lack of human contact, and the seeming hopelessness of his condition. He had nightmares that he could not escape from the King of Germs.[13] Doctors feared that as a teenager he would become even more unpredictable and uncontrollable.

David's story is a unique one defined by developments in air-conditioning, plastics, disinfectants and immunology that made it possible to extend his life beyond a few months. Subsequent developments in genetic screening, gene therapy and more advanced bone marrow transplantation have since made the sterile bubble a temporary measure for individuals born with immune deficiency. While medical and scientific knowledge defined David's life in one sense, his relationship with the media defined it in another. David's life was constantly recorded, partly to secure funding, but also because his situation resonated with a broad audience and generated a debate about medical advancement in genetics and ethics that continues to this day.

When a new playroom was constructed from him as an annex to the bubble, a photographer from United Press International waited for the boy to be coaxed into the new room—it took two days. A camera crew were also in attendance in 1977 when David first tried the space suit made for him by NASA. His 12th birthday 'with a family party, a chocolate cake and a Roman Catholic communion using a sterilized wafer' was reported by *The New York Times*.[14] In 1983 when a bone marrow transplant was scheduled for him, Baylor hospital hired a camera crew to record the procedure. The institution

obviously hoped for a success story, but the screens of his sister's bone marrow had missed the presence of Epstein-Barr, the virus that produces mononucleosis. In David it led to Burkitt's lympohoma and it became clear he would die. In the last 15 days of his life, his first days outside a sterile field, David spent many conscious hours watching television. He was, reports his psychologist Mary Murphy, amazed at the inaccuracies in the saturation coverage of his life and imminent death. He was especially irritated by a reporter who said his space suit, used just five times, had given him mobility.[15] His death, *Time* magazine reported 'was felt across the country'.[16] His eulogy in the *Chicago Tribune* was titled 'Seeing Hope in a Bubble Boy'.[17] In the year after his death, *People* magazine published a two-part cover story on David, co-written by his mother Carol Ann Vetter and Houston journalist Kent Demaret.[18] The two subsequently married. Almost two decades on, in 2006, American Experience, a production of the television station WGBH Boston, produced a 53-minute documentary film of David's life titled *The Boy in the Bubble*, which showed on stations of the Public Broadcasting System.[19]

There are numerous examples that suggest how widely David's, as well as Ted's, predicaments penetrated popular culture. David's situation was satirized in the National Lampoon's 'The Bubble Family'.[20] Ted de Vita is said to have inspired the 1976, ABC made-for-television drama starring John Travolta called the *The Boy in the Plastic Bubble*. Both boys reportedly responded incredulously to its inaccurate depictions of their situation.[21] Later Jake Gyllenhaal starred in *Bubble Boy* (2001) a Disney-made satire of the Travolta movie featuring an immuno-compromised teenager venture into the world in pursuit of a girl, wearing a protective suit with a bubble-shaped upper structure. The scenario is the set-up for a comedic road trip. Whereas David's isolator was, in fact, a set of clumsy and immobile rectangles, formally intersected and weighed down by conduits for waste and provisions, the cinematic and cartoon versions of the isolator have the smooth iconic 'bubble' form of Banham's un-house and the portability of Archigram's Suitaloon. Thus the moving story of an immune deficient child's involuntary isolation, was coupled with the powerful architectural image of a transparent and sheltering dome. The potency and celebrity of this medico-architectural image of the boy in the bubble brings us to the third story.

Environmental illness

David died in 1984, a year after the publication of the first issue of the scholarly journal *Clinical Reviews in Allergy and Immunology*. By 1988, Britain's fasted growing charity was the ME Association. It reported a rise of membership of 300%. ME, or myalgic

encephalomyelitis, is one of a number of overlapping and poorly understood illnesses that sufferers attribute to contact with materials in the environment. Claire Francis, one of the most vocal and well-known sufferers has labeled ME "an immune dysfunction disease, possibly caused by pollution."[22] Related conditions and names applied to them are multiple chemical sensitivity, chemical injury syndrome, 20th Century syndrome, total allergy syndrome, environmental illness, yuppie flue, chronic fatigue and immune deficiency syndrome. Together these have been called 'Environmental somatization syndromes', and typically, they respond to new technologies. Despite distressing somatic symptoms, none of these can be seen as a single clinical entity whose aetiology can be understood in biological terms. All raise issues of 'symbolic' and 'actual' illness. They are widely understood by physicians and psychiatrists as biopsychosocial illnesses, that is, where psychological distress, in this case around environmental toxicity and one's control over the environment, is being expressed through somatic symptoms.

Although chronic fatigue syndromes are not new, the term emerged in the mid-1980s following research that tried to link evidence of infection by the Epstein-Barr virus (the virus that killed David) to chronic fatigue. Following media attention to the research, physicians in the US were inundated with requests to evaluate chronic fatigue. By the 1990s an estimated million Americans identified as sufferers and there were about 400 local support groups for 'chronic fatigue immune dysfunction syndrome'.[23] Most reporting to a CFS clinic have already self-diagnosed and believe their illness is predominantly physically based. Sufferers are reluctant, indeed most refuse, to accept a psychological interpretation for their illness. Inherent in the concept of allergy or infection is that these are without blame and sufferers avoid any moral sanction, whereas many people regard psychiatric disorder as implying some personal culpability. External attribution is preferred by sufferers who believe that the immune system has been weakened by chemicals, candida, antibiotics, immunization, food additives, aerosol, stress, food allergies, electromagnetic sensitivity, sick building syndrome, dental amalgam, metal toxicity from pesticides, and 'modern life' generally. People affected by multiple chemical sensitivity syndrome describe symptoms in relation to environmental exposures, especially odors, most commonly from perfumes, solvents and cleaning agents, new carpet, car exhaust, air pollution, plastics, formaldehyde and cigarette smoke. In Sweden, a very localized epidemic of allergy to electricity appeared in the 1980s.[24] Wessely notes that the conclusion of many of the patient advocacy groups is that CFIDS is "a signal of the sickness of the planet" and the solution to it can be nothing less than "improving the total environment."[25]

One doesn't want to overstate the individual significance of David Vetter's life in the bubble, for anxieties around invisible pathogens and one's vulnerability to them can be found as far back as ancient Greek notions of miasma. Vitruvius cautioned against the effects of miasma from marshes when establishing a city and the miasmatic theory of disease persisted through the Middle Ages and was used to explain the spread of cholera in London and Paris in the 1850s. Robert Boyle attributed latent powers to the air when, in 1674 he wrote the fabulously titled *Suspicions about the Hidden Realities of the Air*.[26] The Gas battles of the First World War and the invention of the gasmask lent a more concrete image for anxieties around environmental pathogens to take hold. The humidicrib, invented and manufactured by Australian firm Both Equipment in the 1930s, is the first of a series of medical technologies for isolated living that have been widely published in the popular media. The sterile bubble Vetter and de Vito were installed continues this history, but abetted by television news coverage and cinematic narratives, is one of the contributing images behind an epidemic of immune deficient responses to the environment.

The situation is not dissimilar to that of neurasthenia at the end of the nineteenth century. George Beard, the father of neurasthenia, ascribed it to the new acquisitive nature of society, singling out "wireless telegraphy, science, steam power, newspapers and the education of women" as causes."[27] Wessely concludes that CFIDS develops out of multiple overlapping social conditions: the modern preoccupation with the immune system and the belief that this system is being compromised by various features of contemporary life; themes of toxicity and purity, the general increasing fascination with medical science and the rise in medical consumerism. Widespread concern about the state of the environment can lead to people with unexplained symptoms to turn to the environment as a cause for their problems. Howard and Wessely note "Sufferers from mysterious conditions that lie outside conventional medical practice no longer consider themselves to be oppressed by spirits and demons but by mystery gases, toxins, and viruses."[28] This is not to deny that CFIDS is real to people suffering it and to medical professionals trying to help those people. But it is to note that society influences which behaviors are seen as symptoms, that individual bodies and their processes interact with psyches, environments, and social, institutional, and cultural milieus.

Where CFIDS sufferers reject psychosocial explanations, they logically treat their symptoms by avoiding the substances or environments they attribute as causes—in the

case of allergy sufferers that can mean all environments beyond the scrupulously controlled interior of their own home.[29] Howard and Wessely observe that "progressive isolation from the normal environment may result, with the sufferers lives becoming increasingly restricted. . . If symptoms result from anxiety, panic or phobia but patients are treated as if they are sensitive to some aspect of their environment the unintended result may be to reinforce maladaptive behaviours and perpetuate disability."[30] CFID and multiple allergy sufferers withdraw, metaphorically, to life in a bubble. The dire outcomes for multiple allergy sufferers were the subject of Todd Hayne's 1995 medical thriller *Safe*. The film is the story of Carol, played by Julianne Moore, a middle-aged homemaker who develops multiple chemical sensitivity. Carol takes refuge in a dubious New Age retreat for those who are 'environmentally ill', where the centre's view of illness and cure as questions of spiritual awareness, furthers her passivity and ultimately leads to her enclosure within a containment chamber at the retreat.

The emergence in the 1980s of indoor air quality as a separate discipline, with thousands of consultants, investigators and remediators addressing indoor environmental problems, might well be seen as the flipside of 20th Century Syndrome—a profession produced by, and in turn feeding, collective anxieties around infection, pollution and the immune system, and tied to the ambivalent status of architecture as simultaneously a provider of sanctuary and a harbinger of toxins. Sick building syndrome can be seen as one side effect of the complete enclosure associated with air-conditioned environments. Ventilation is the usual remedy for diluting contaminants and improving indoor air quality. Sick building syndrome could also be seen as one of the side effects of increased anxiety about air quality, and increased capacity for measurement. As research suggests, it is difficult to distinguish between the physical effects of measurable poor air quality and the psychological effects on occupants of being unable to control the environment locally—significantly, the first groups of people complaining of illness caused by buildings, were female co-workers in low status office work. As Mary Douglas and Aaron Wildavsky write in *Risk and Culture* (1982), the selection of environmental pollution and personal contamination, from all other possible contemporary dangers about which to worry, lies, firstly, in the possibility of attributing blame to people in power and, secondly, to the possibility of personally taking actions to avoid or lesson the risks.[31]

Conclusion

The veracity of medical journalism is much debated, as are its effects. Studies have shown that medical reporting is frequently inaccurate and misleading, that if fails to

convey necessary context and that journalists often do not understand the science of the subject on which they are reporting. One Australian study in which medical experts rated 1230 news stories over four years, found that the poorest coverage of health news was in human interest/current affairs television programs.[32] It has been noted that "medical reports can increase or diminish the willingness of individuals to seek medical care, may raise expectations (sometimes falsely), may dash hopes, or may provoke alarm (sometimes unnecessarily)."[33] Of course, the impact of medical journalism is difficult to measure, even in adjacent fields of individual health behaviour, health care practices and health policy.[34] When a medical subject such as the bubble boy or multiple allergy syndrome, is taken up in cinema, the ambition is even further away from the accurate dissemination of information. As Stephanie Brown writes, films that bring together the cinematic and medical gaze "enact crucial issues in current debates on empathy and medicine, ethical lessons and humanistic perspectives, accountability and professionalism."[35] Their aim is to stimulate debate and to entertain.

It would be impossible, then, to quantify the impact of media reportage on the predicament of two boys in sterile bubbles on the health behaviour of the broader population, and even less so on the design interests of architects. Bringing these three stories together achieves little more, perhaps, than asserting their approximate historical coincidence and a superficial visual resemblance. Yet, it seems to me that we are in equally problematic theoretical territory if we fail to observe that the image of the environmental bubble as personal sanctuary circulates across different media channels, from television and film, in popular journals such as *Time* and *Life* magazine, as well as in architectural media. We would be remiss if we did not observe that the immobile isolator inhabited by David, is transformed in the popular imaginary to something resembling the pneumatic bubbles of the architectural avant-garde. The isolator literally and metaphorically, leaves the confines of the hospital and the house in which it was located for an autonomous life. Having noted the pervasiveness of the desire, or perceived necessity, for environmental control figured by the interior as a bag or bubble of pure air, we must surely inquire as to how we arrived here and look for evidence beyond our discipline.

The ongoing use of bubble environments for group experiences and meditative isolation suggests that the dialectic of confinement and cure remains with us. We have recently seen an outpouring of transparent bubbles in art and architecture. To name a few: 2003 Christian Holstad's 2003 inflatable bubble room in an art gallery in an installation called

Life is a Gift; Monica Forster's Cloud of 1995; Carlo Ratti's The Cloud proposal for the London 2012 Olympic Games; Tomas Saraceno's many iterations of bubble's such as 'Observatory, Air-port City', at the Hayward Gallery for the exhibition Pscyho Buildings in 2008 and his 'Biospheres' for an exhibition on Climate Change in Copenhagen in 2009. Berlin-based architects Raumlabor have been touring their 'Spacebuster', an inflatable dome in translucent plastic, for events around the globe, including at the premier architecture venue, Storefront Gallery in New York in 2009.

The sense of the comfort of being separate, as well as the existential alienation of the immune sufferer are present in these examples of art and architecture, along with themes of spectacle, entertainment, avant-garde protest, mobility, technological enthusiasm, fears of pollution, atmosphere, etc. What the bubble reveals about architecture's relationship to media is its continuity with popular media and news. This relationship is both consumptive and transformative, with architects digesting and representing tropes that emerge in medicine, but also in other fields of science and technology. It is also productive, with architecture a source of images and ideas that are transferred into adjacent disciplines.

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