

EXPLORING HEALTHCARE ARCHITECTURE THROUGH THE MEDIUM OF FILM: Motives and Techniques

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Abstract

The interdisciplinary field of person-environment relations has, from its origins, addressed the transactional relationship between human behavior and the built environment. This body of knowledge has been based upon qualitative and quantitative assessment of phenomena in the “real world.” This knowledge base has been instrumental in advancing the quality of real, physical environments globally at various scales of inquiry and with myriad user/client constituencies. By contrast, scant attention has been devoted to using simulation as a means to examine and represent person-environment transactions and how what is learned can be applied. The present discussion posits that press-competency theory, with related aspects drawn from functionalist-evolutionary theory, can together function to help us learn of how the medium of film can yield further insights to person-environment (P-E) transactions in the real world. Sampling, combined with extemporaneous behavior setting analysis, provide the basis for this analysis of healthcare settings as expressed throughout the history of cinema. This method can be of significant aid in examining P-E transactions across diverse historical periods, building types and places, healthcare and otherwise, otherwise logistically, geographically, or temporally unattainable in real time and space.

Keywords: film; chronology, person-environment transactions; behavior setting analysis.

INTRODUCTION

A film is a telegraphic, narrative device, capable of engaging critical architectural discourse. This has been demonstrated throughout the history of film, including Fritz Lang's *Metropolis* (1927), Robert Altman's *The Last Picture Show* (1971), and the dystopic conditions depicted in Stanley Kubrick's *A Clockwork Orange* (1971), Ridley Scott's *Blade Runner* (1982), and Terry Gilliam's *Brazil* (1985). The latter three films were particularly critical of International Style minimalism and lifeless Post-WWII cities. This artform weaves together diverse themes: nature, landscape, architectural space, and humanity, in cinematic time/space. The viewer can be transported back and forth or thrust into the future—invoking alienation and discompassion, or its antithesis, caring and compassion. Myriad hospitals and allied healthcare settings have been depicted from the earliest days of the medium. Scenes of hospitals, asylums, clinics, and makeshift quarters adapted for healthcare purposes have exposed the most inner profundities of the human condition. Whether a film features a single scene in a hospital, or is the entire subject of the film, it nonetheless becomes etched in our minds—such as the eerie late Sunday night hospital scene in *The Godfather I* (1972) or Jack Nicholson's insane rants set against the bleak institutionalism of a psychiatric hospital in *One Flew Over the Cuckoo's Nest* (1975).

The medium of film has arguably emerged as the most popularly embraced art form of the past 100-plus years. Total receipts continue on an upward trajectory. Films ranging from major studio blockbuster releases to niche “art” films are supported by devoted constituencies (Jackson, 1998). Architects have long been fascinated with the relationship between architecture and film (Weihsman, 1995), whereas P-E researchers have not. Literature on the impact and depiction of architecture in films has been centered on aesthetic themes and the use of particular buildings, to urban, suburban and small town settings. Buildings and places in the everyday milieu function as

narrative devices, and are integral to the art of storytelling be it the critique of industrialization, as in *Metropolis*, placelessness, as in futurist films, including the harsh critique of modernism (Griffith, 1997; Mitry, 1997). Many memorable films, with healthcare settings featured in one or more iconic scene, have been based on novels (Mowrey, 1994; Tibbets and Welsh, 1997). Historians have taken note of a healthcare facility's thematic currency within a narrative, i.e. 18th century insane asylums, i.e. *The Elephant Man* (1980), the U.S. Civil War, i.e. *Gone with the Wind* (1939), to the International Style megahospital, i.e. the Tokyo hospital scene in *Lost in Translation* (2006).

Critical discourse within the field of architecture, health, and society is centered on historical analyses of particular building types, specifically asylums (Yanni, 2007), hospitals and outpatient care settings (Verderber and Fine, 2000; hospices (Verderber and Refuerzo, 2006), healthcare architects (Adams, 2008), and hybrid historical-evidenced-based, contemporaneous analyses of the hospital as an evolving building type (Verderber, 2010). The field of P-E transactions, for its part, includes many hundreds of post occupancy evaluations of physical settings (Baird, et al, 1996; Mallory-Hill, et al, 2011). It is a broad literature that has drawn neither inspiration nor researchable hypotheses from the medium of film. This remains quixotic, as a film can provide vast insight into P-E health-related themes, if only the medium were recognized as a valid, researchable, and generalizable source of data—as a vehicle for meaningful socio-spatial-cultural inquiry. The focus of this discussion is therefore: 1. To systematically examine film—filmedic—content as a means to engender further understanding in the creation of genuinely therapeutic and supportive healthcare settings globally; and 2. To draw upon filmedic content in the realm of P-E relations as a tool in advancing knowledge for use by planning and design professionals in daily practice.

THEORETICAL FRAMEWORK

For patients (and often caregivers as well) hospitals have traditionally been associated with extreme physical and emotional stress, loss of personal control and autonomy, fear, and uncertainty. A hospital is often viewed as a place of last resort. Unfortunately, the modern megahospital became skewed towards obsessive institutionalism. Against this backdrop two streams of theoretical work in the field of P-E relations are particularly pertinent to the present discussion (Verderber, 2000). The first, a functionalist-evolutionary perspective of human functioning in the physical environment, is premised on the inherent, chronic uncertainty of the environments in which humans have evolved over the millennia (Kaplan and Kaplan, 1982). A second, complimentary theoretical perspective has been put forth by the late gerontologist M. Powell Lawton (1985)—a support-autonomy dialectic. It is premised on the assumption that the degree of support provided by a physical setting is directly commensurate with one's physical and cognitive abilities.

Personal “competencies” are directly related to outcome—the support provided by, in the present context, a healthcare setting. Stability—equilibrium—is attainable only when autonomy is attained on a sustained basis (personal control and predictability are tenets also embedded within the Kaplans' model). Reactivity (response) to the healthcare setting (externally applied interventions) function in tandem with proactivity (persons' coping behaviors within the healthcare setting). Hence, support/non-support is commensurate with press = reactivity, and autonomy/non-autonomy is commensurate with competency= proactivity. The process of coping in an uncertain healthcare setting, referred to by Lawton as cognitive restructuring, is therefore linked to predictability and to the capacity of humans to q: it is often difficult if not impossible to “take” respondents to actual sites due to geographic distances, the considerable costs incurred, inclement weather, and/or unsafe travel conditions. The latter is typified in war zones or in the aftermath of natural disasters such as a hurricane. Moreover, there is always the issue of temporal restrictiveness. In other words, it is impossible to walk the corridors of a hospital in Europe, i.e. the Ospedale Maggiore in Milan, of 400 years ago (Verderber, 2000).

METHODOLOGY

Sampling makes it possible to document an actual setting and “transport “ it to the respondent, who may be hundreds if not thousands of miles away. As mentioned, visual documentation has been used frequently in this manner in P-E research over the past forty years (Davis and Ayers, 1973; Alexander, 1978; Mertes, 1985). The use of “classical” photo and video simulations dates from the origins of the field (Appleyard, 1969; Appleyard and Craik, 1974; McKechnie, 1977). These approaches have in general been successful: the former based on iterative audiovisual conveyance of a setting as is, whereas the latter technique transposes and manipulates actual places/buildings as experienced *ex post facto*. Video and Internet-based image sampling has been used in aesthetic preference and user satisfaction research (Cooper Marcus, 2006; Zeisel, 2006). Virtual reality software now provides unprecedented opportunities to sample settings of vast scope, depth, and richness, anywhere, anytime (Oakes, G.L., et al, 2008; Ellard, 2010; Jin, W. 2011). Why then not sample a film to explore its content? Why not attempt to learn of P-E transactions in the myriad healthcare behavior settings that have been documented *vis-à-vis* the medium of film over the past century or more?

As mentioned, hospitals and asylums have been of enduring fascination to filmmakers since the advent of the medium in the late 19th century (Kaysen, 1993; McKee, 2010; Anon; 2013). Some of the most powerful films in history have been made within or about healthcare settings. The list of films that have one or more key scenes set in a healthcare setting is long and constantly expanding. A group of seventy-nine healthcare-themed films is reported in Figure 1 in the order of the year of their initial release. This film chronology, admittedly partial, nonetheless represents an attempt to draw together a representative range of films, to date, that depict a healthcare setting in one or more iconic scene. This compendium spans from the classic WWI battlefield film *Johnny Get Your Gun* (1919) to the recent films *The Descendants* (2012) and *Hours* (2013). Thematic content varies broadly across this compendium, with six key themes becoming discernable. These are reported in Figure 2. Here, themes (T1- T6) consist of iconic scenes depicting open hospital wards (T1), iconic scenes set in semi-private rooms in hospitals (T2), scenes set in private hospital rooms (T3), in emergency and intensive care settings in hospitals (T4), various iconic scenes set in public indoor spaces within hospitals and allied healthcare settings (T5), and iconic scenes set in the exterior environs of hospitals and allied healthcare settings (T6). The film chronology (Figure 1) is connected to these six themes (Figure 2).

The theoretical framework provided the basis for operative constructs centered on environmental press as it co-varies with competency. Based on this, the criteria for film sample (F-S) selection and the extrapolation of the film sample’s behavioral content—its P-E content—was operationalized. Two constructs were each translated into degrees of intensity—low, moderate, to high intensity—as perceived to exist in a given scene. Restated, a given F-S was interpreted as exhibiting a low, moderate, or high degree of environmental press, *i.e.* stress, or difficulty imposed upon the occupant of the setting (scene). Similarly, a given individual occupant/user (actor) is assessed as possessing a low, moderate, to high degree of personal competency, and hence, personal autonomy within the scene. Filmic attributes included in this extrapolative content analysis process consisted of aesthetic factors (meaning, symbolism, architectural period, style size, proportion color, and so on), patterns of use factors (furnishings, fixtures, access-inaccess), maintenance and upkeep factors (condition, cleanliness), and environmental comfort/discomfort factors (temperature, air quality, overall commodiousness).

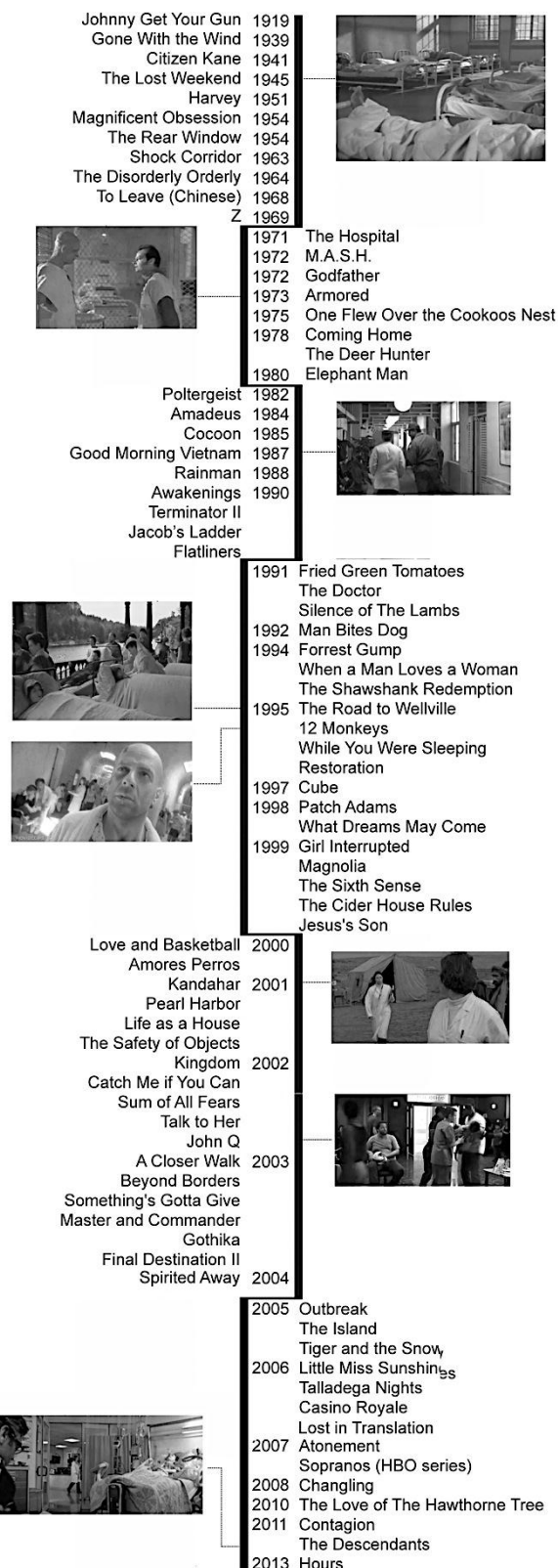


Figure 1: Chronology: Films Depicting Healthcare Architecture and Healing Landscapes (Images Source: www.netflix.com; Graphic: Author).



Figure 2: Healthcare Environments: The Film/Scene Thematic Content
(Images Source: www.netflix.com; Graphic: Author).

In filmmaking, the camera establishes the point of reference to the physical space depicted in a given scene. Lighting, height, position, rapidity of camera movement, special effects, angle, distance from the subject(s) are key variables (Ward, 1997). Capturing the essence of a set (setting) and behaviors within (action) is of primary concern to the director, art director, and cinematographer (Matlin, 1978). For this reason, great care is taken, and considerable resources are required, to scouting filming locations. The still shot is especially critical in communicating the essence of a place or building (Harper, 2002). In response, three F-S selection criteria were

developed: 1. Is the sampled still shot (scene) iconic within the body of the film? 2. Does the scene sampled capture to a reasonable degree the film's core narrative? and 3. Does the scene sampled convey key patterns of use within the space or room and characteristic interactions between staff and patients? Based on these criteria, ten films were sampled and are reported below, extending prior work (Verderber, 2000). These films are analyzed in relation to the film typology and in relation to the theoretical framework. Each sample was viewed twenty times during the content analysis process. In each F-S, a still shot is accompanied by an extrapolated floor plan or site plan (set/scene) with behavioral patterns of movement identified among occupants (actors). In each floor plan, staff are distinguished from patients (with staff coded as open circles, and patients coded as solid circles). Each setting's (1-10) press level is assessed (low/moderate/high) in relative to its occupants' reactivity level (low/moderate/high). Accordingly, in each setting, occupants' competency level (low/moderate/high). The ten films analyzed are:

1. Public Square Trauma Center: *Gone With the Wind*

Gone With the Wind (T6) is the iconic 1939 epic film adapted from Margaret Mitchell's Pulitzer-winning 1936 novel of the same title. It was directed by Victor Fleming and is set in the antebellum American South—with the American Civil War and Reconstruction era portrayed from a distinctly White, Southern point of view. Near the end of the war the Yankee Army burns Atlanta to ashes. Scarlett O'Hara (Vivian Leigh) is compelled to assist her family's long-time physician as he attends to thousands of wounded and dying confederate soldiers in a bombed out church in the center of the ravaged city. Things get gruesome as limb after limb is amputated without anesthesia. This film received 10 Academy Awards. Behavior Setting Documented: In one of the most moving scenes in film history, the public square across from the makeshift church-cum-hospital is transformed into a mass open ward/morgue. The camera slowly pans, in silence, as the film's multiple sprawling themes coalesce, collapsing into a single moment. Period/Year: 1864. Filming occurred in Los Angeles on "the back forty" of Selznick International, with all the location scenes shot in Los Angeles or neighboring Ventura counties (Figures 3a and 3b). Environmental press = high/inhabitants' (I) reactivity level = low; inhabitants' (I) competency = low/inhabitants' (I) proactivity level = low.

2. Open Nightingale Ward: *Pearl Harbor*

Pearl Harbor (T1) is a 2001 action film directed by Michael Bay, and features a large ensemble cast. It depicts the surprise Japanese attack on Pearl Harbor on December 7, 1941, and the subsequent General Doolittle Raid on Tokyo three months later. The first half depicts the beguiling serenity of Hawaiian Islands military base life and daily life in pre-War Honolulu. A regiment of nurses is assigned to the base's Nightingale open ward infirmary. Behavior Setting Documented: On the morning of the attack the hospital is transformed in minutes into a grisly scene of mass hysteria with nurses attempting to care for hundreds of wounded and dying soldiers. This antiseptic, whitewashed, bucolic Nightingale open ward was transformed into a hellish scene. Filming occurred in Los Angeles and Hawaii. The "ward" was constructed on set, with a scene on the front steps of "the hospital" shot at the old Los Angeles County Historical and Art Museum, south of downtown Los Angeles. Period/Year: 1941 (Figures 4a and 4b). Environmental press = high/I reactivity level = moderate (staff), patients (low); I competency = low/I proactivity level = moderate (staff), low (patients).

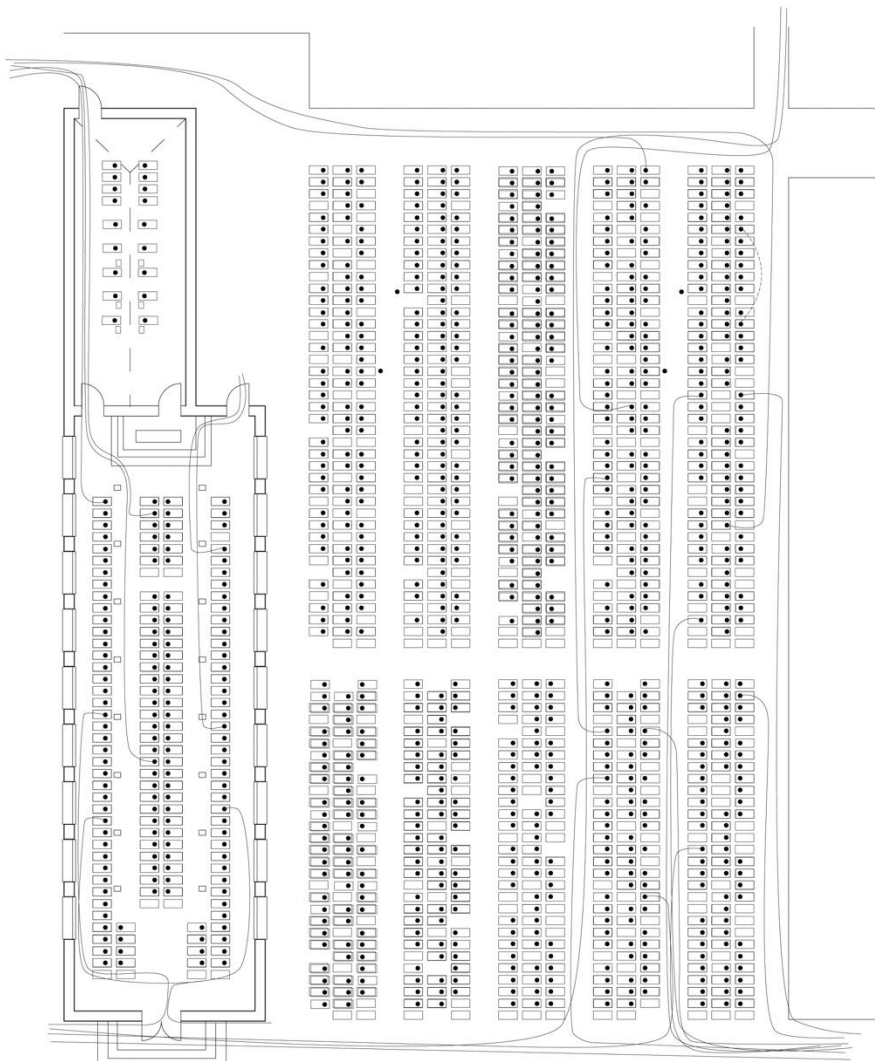


Figure 3a and 3b: Gone With the Wind (Image Source: www.netflix.com; Drawing: Author).

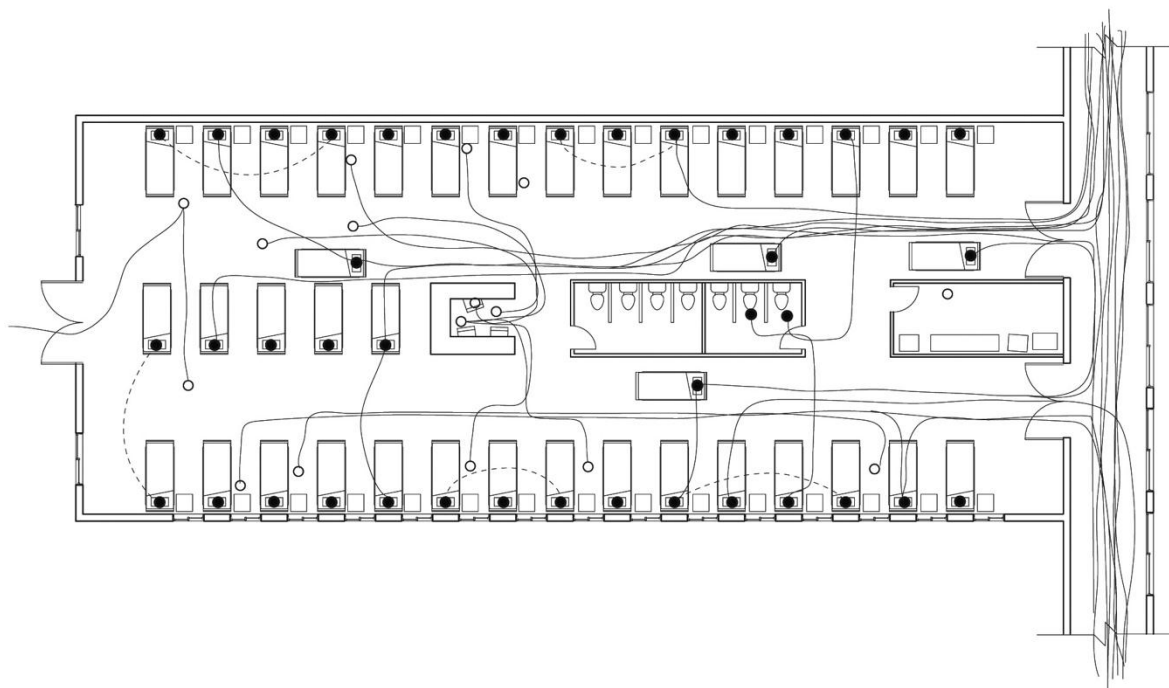


Figure 4a and 4b: Pearl Harbor (Image Source: www.netflix.com; Drawing: Author).

3. Open Detox Ward: *The Lost Weekend*

The Lost Weekend (T1 and T5) is a 1945 Academy Award winning drama directed by Billy Wilder, starring Ray Milland and Jane Wyman. It is based on a novel of the same title, about the downward plight of an alcoholic writer. It spans a six-day period in Don Birnam's (Milland's) life and this timeline captures a weekend-long alcoholic binge and the writer's subsequent incarceration in New York City's Bellevue Hospital detox unit. The unit is a stark variant of the still-prevalent Nightingale open plan-nursing ward. In 2011, this film was added to the National Film Registry of the U.S. Library of Congress. Behavior Setting Documented: An all-male, open ward housing forty patients in long rows of steel frame beds with few provisions. The days and

nights are filled with tedium, punctuated with the sudden violent outbursts of the men as they battle their delirium tremors. In one harrowing scene Milland screams out in utter despair the middle of the night. Period/Year: mid-1940s. Filmed on location in New York City, including Bellevue Hospital on First Avenue and East 29th Street (Figures 5a and 5b). Environmental press high/l reactivity level = high (staff), moderate (patients); I competency = low (patients), moderate (staff)/I proactivity level = low.

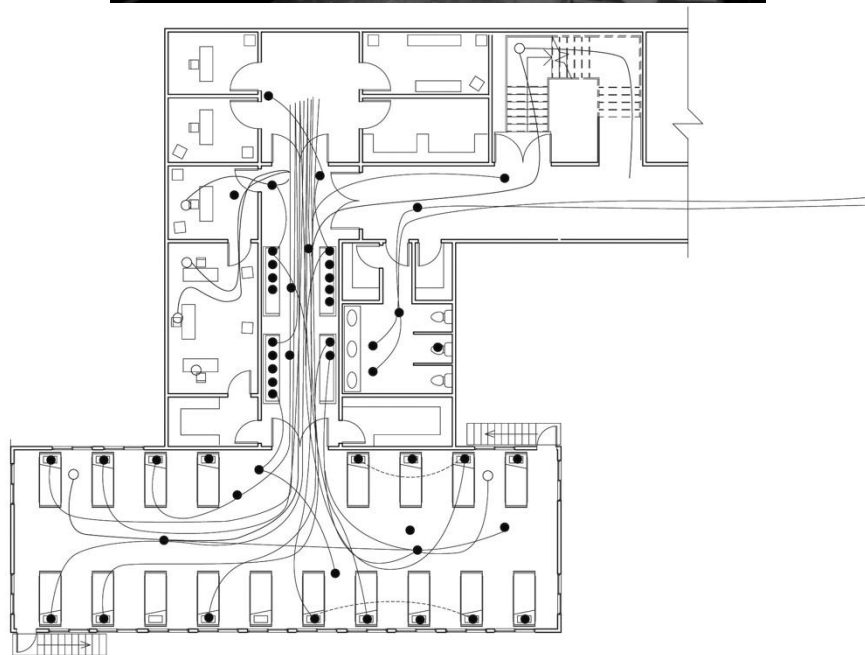


Figure 5a and 5b: *The Lost Weekend* (Image Source: www.netflix.com; Drawing: Author).

4. Wartime Field Hospital: *M.A.S.H.*

M.A.S.H. (T4) is a 1970 American dark comedy directed by Robert Altman, based on Richard Hooker's novel "MASH: A Novel About Three Army Doctors." It was among the most commercially successful films of the 1970s. It chronicled the ups and downs of a unit of undisciplined field medics stationed at a Mobile Army Surgical Hospital (MASH) during the Korean War. However, its metaphorical subtext was a thinly veiled anti-war statement against the then-escalating Vietnam War. The 4077th MASH unit is assigned two replacements: captain "Hawkeye" Pierce (Donald Sutherland) and captain "Duke" Forrest (Tom Skeritt). This film

inspired the popular and critically acclaimed television series *M*A*S*H*, which ran from 1972 to 1983 in the U.S. Behavior Setting Documented: On their arrival the new medical staff proceed to wreak havoc, including instigating numerous blood-soaked surgical scenes in the field hospital's operating theater tent. Period/Year: early 1950s. Filmed on studio sets and in the Los Angeles area (Figures 6a and 6b). Environmental press = high/I reactivity level = moderate (staff), low (patients); I competency = low (patients), moderate (staff)/I proactivity level = moderate (staff), low (patients).

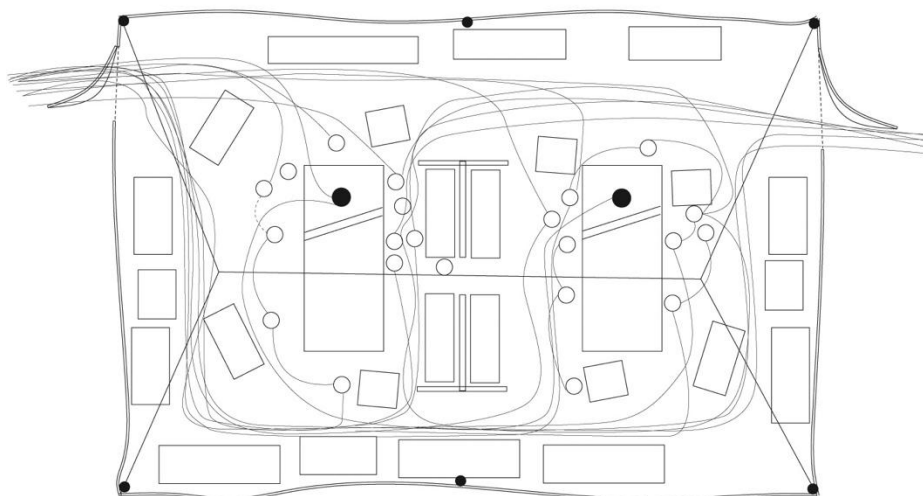


Figure 6a and 6b: *M.A.S.H.* (Image Source: www.netflix.com; Drawing: Author).

5. Hospital-as-Refuge: Z

Z (T1) is a 1969 French language political thriller directed by Costa Gavras, based on the 1966 novel of the same name by Vassilis Vassilikos. It presents a thinly fictionalized account of events surrounding the assassination of the Democratic Greek politician Grigoris Lambrakis in 1963. The film aptly captures the public outrage directed at the military dictatorship that ruled Greece at the time. At the time of its release (1969), film critic Roger Ebert anointed *Z* the best film of 1969. Its themes and imagery resonated with many Americans at the time, having been released in the direct aftermath of the riots during the 1969 Democratic National Convention in Chicago in 1968. The anti-war movement was escalating and becoming more violent. The ongoing strife due to the burgeoning anti-Vietnam War had divided the Nation, and *Z*'s core thesis remains equally

powerful and relevant to the violent unrest occurring today in the Middle East. Behavior Setting Documented: In a memorable scene, the opposition leader (Yves Montrand) is hospitalized alone in an open plan Nightingale ward. He is the sole patient—an extreme measure made necessary to thwart enemies determined to assassinate him. Period/Year: 1960s. With dialogue in French, *Z* was filmed on location in Algeria (Figures 7a and 7b). Environmental press = high/I reactivity level = low; I competency = moderate/I proactivity level = moderate.

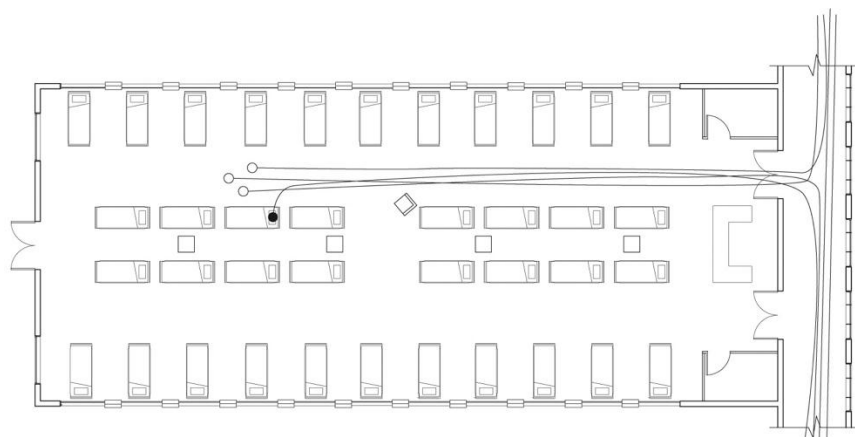


Figure 7a and 7b: *Z* (Image Source: www.netflix.com; Drawing: Author).

6. Inner City Hospital Turmoil: *The Hospital*

The Hospital (T5) is a 1971 black comedy-drama directed by Arthur Hiller and starring George C. Scott as Dr. Herbert Bock. The film is set in a mythical 1050-bed urban teaching hospital in Manhattan. The hospital is in near-chaos 24/7, as is the personal life of Dr. Bock, the Chief of Medicine. The massive urban hospital suffers from excessive adverse patient care medical events—more specifically, a rash of sudden and inexplicable inpatient deaths. The film captures the tumultuous late 1960s period in inner city urban America. Local community activists picket the hospital. The scenes in the emergency department are realistic, and reveal the crisis of the medically uninsured. Behavior Setting Documented: Activists, meeting with the administration in the medical library, are determined to stop the annexation and demolition of an apartment building that the hospital owns and has elected to turn into a parking lot. Their demand is for its conversion to a community-based drug rehabilitation facility. Year/Period: Late 1960s. Shot on location at the Metropolitan Hospital Center on New York City's Upper East Side (Figures 8a and

8b). Environmental press = high/I reactivity level = moderate; I competency = moderate (staff)/I proactivity = moderate (staff).

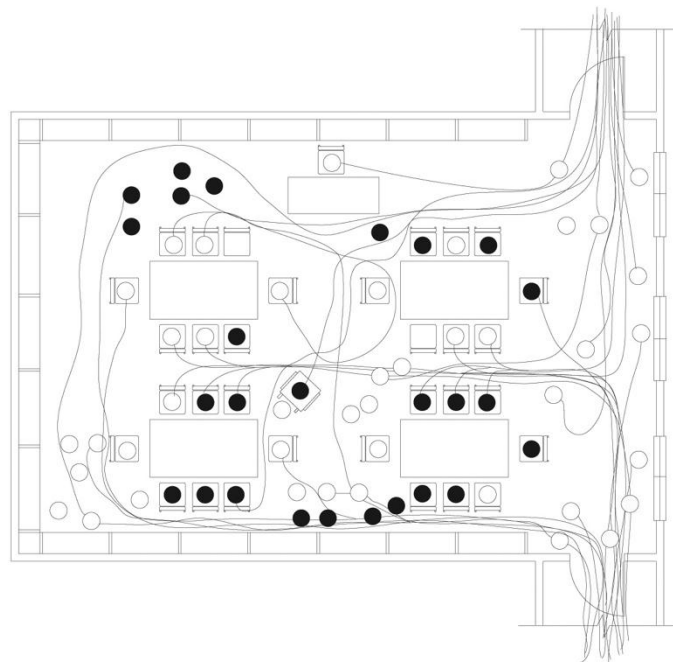


Figure 8a and 8b: The Hospital (Image Source: www.netflix.com; Drawing: Author).

7. Military Base Hospital Ward: Coming Home

Coming Home (T1) is a 1978 film directed by Hal Ashby, starring Jane Fonda, Jon Voight and Bruce Dern. It was loosely based on the novel of the same name. The plot follows a love triangle between a young woman, her Marine husband and a paralyzed, hospitalized Vietnam War veteran who is receiving inpatient treatment in the rehabilitation program in a U.S. Army base hospital on the West Coast. She meets a hospitalized returned veteran, Luke Martin (played by Voight), while her husband is stationed in Vietnam. Sally (Fonda) had moved off the military base and with little to do, living in the monotony of suburbia, she elects to volunteer at the base hospital. The hospital is quickly filling up with severely injured, returning soldiers. Thousands of returned veterans from the Vietnam War were warehoused in overcrowded places such as this base hospital. Behavior Setting Documented: an 18-bed open ward depicts overcrowded conditions and the harsh institutionalism of mid-century American military hospitals. Period/Year: 1968. Shot on location in the Los Angeles area (Figures 9a and 9b). Environmental press = high/I reactivity level = low; I competency = low (patients), moderate (staff)/I reactivity = low (patients), moderate (staff).

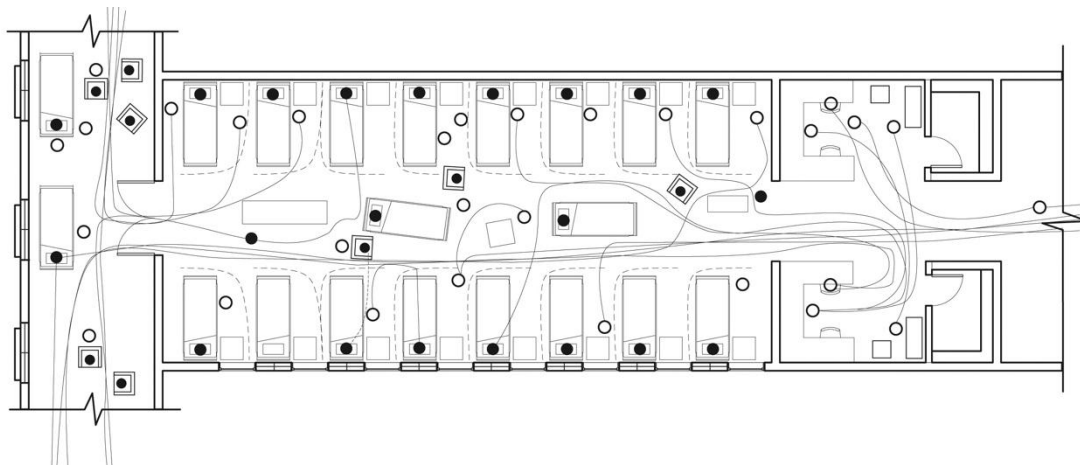


Figure 9a and 9b: Coming Home (Image Source: www.netflix.com; Drawing: Author).

8. Placeless Tent Infirmary: Kandahar

Kandahar (T4 and T6) is a 2001 Iranian film directed by Moshen Makhmalbaf, set in Afghanistan during the height of the 1990s rule by the Taliban. It is alternatively known as *The Sun Behind the Moon*. It is a part-fictionalized tale of a successful Afghan-Canadian (played by Nelofer Pazira) who returns to Afghanistan after receiving a letter from a sister, left behind when the family escaped the country on a day's notice. The letter states that she plans on committing suicide on the last solar eclipse of the millennium. The extremely harsh reality of daily life for women is highlighted, together with the utter destruction of Afghan society caused by more than two decades of continuous war. Most of the major scenes were shot at the Niatak refugee camp or (clandestinely) in Afghanistan. It received scant critical attention in the West until after 9/11. *Kandahar* subsequently won Makhmalbaf the Federico Fellini Prize from UNESCO (2001). Behavior Setting Documented: One particularly compelling scene depicts a makeshift tent hospital in desert terrain where only the most minimal level of healthcare is available. Period/Year: late 1990s (Figures 10a and 10b). Environmental press = high/I reactivity level = low; I competency = low/I proactivity = low.

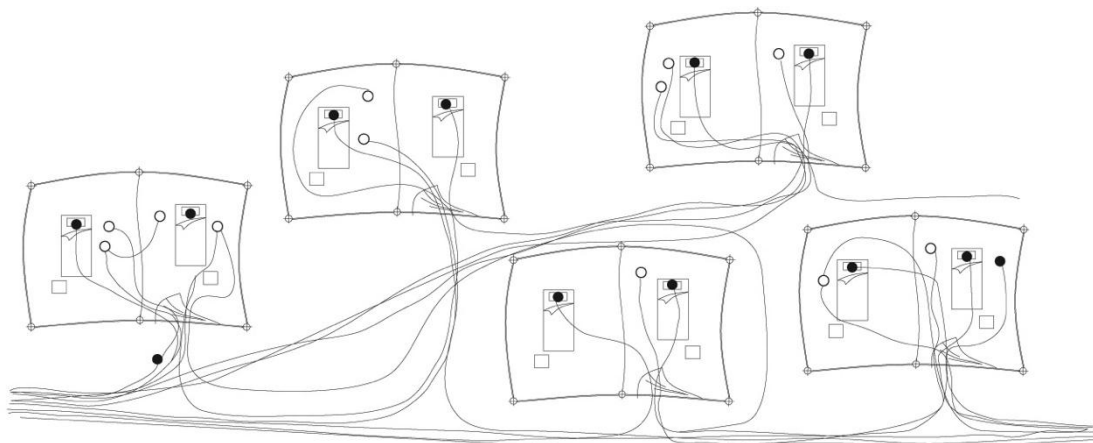


Figure 10a and 10b: Kandahar (Image Source: www.netflix.com; Drawing: Author).

9. Dystopic Asylum: 12 Monkeys

12 Monkeys (T1 and T5) was an acclaimed 1995 science fiction suspense film directed by Terry Gilliam. It was inspired by Chris Marker's 1962 short film *La jetée*, and the film starred Bruce Willis, Madeleine Stowe, Brad Pitt, and Christopher Plummer. James Cole (Willis) played a convicted criminal living in a grim post-apocalyptic future (Figures 11a and 11b). In 1996-97 a virus so deadly erupts that forces the surviving population to live underground as it contaminates the Earth's surface and extinguishes most living species, including humans. To earn a pardon, Cole allows scientists to send him on multiple, and treacherous, reconnaissance time-trip missions "back to the past" to collect data on the virus so a cure can be developed in the present (future). He is repeatedly briefed, examined, and debriefed upon his return from these bizarre excursions. The minimalist/stripped neoclassicism of a 19th century insane asylum is featured throughout, including scenes set in an operating theatre, and in the asylum's omnipresent, forbidding, corridors. *12 Monkeys* was filmed at the long-abandoned Eastern State Penitentiary, in the Fairmont section of Philadelphia, a facility built in 1829. Behavior Setting Documented: One particularly memorable scene was shot in a cavernous open space, overcrowded, chaotic, and with patients wandering aimlessly about. Period/Year: mid-21st century. Environmental press = high/I reactivity level = low; I competency level = low/I proactivity level = low.

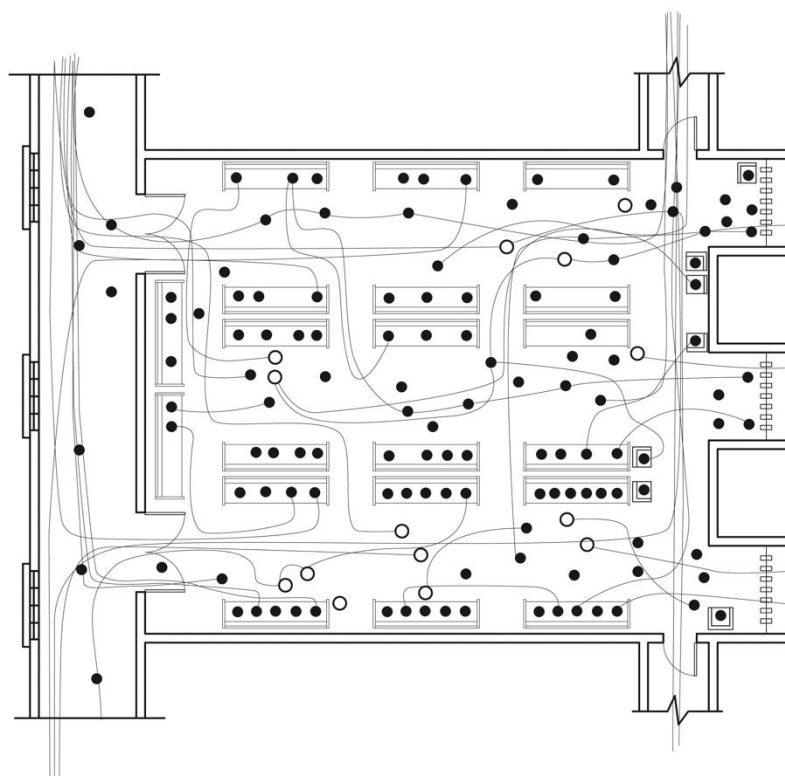
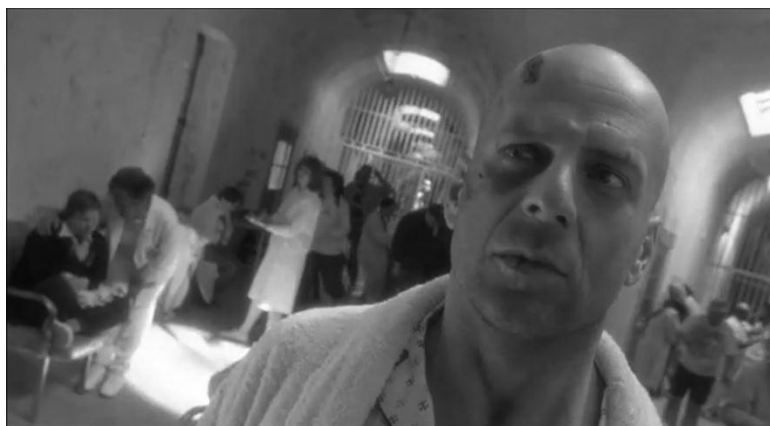


Figure 11a and 11b: 12 Monkeys (Image Source: www.netflix.com; Drawing: Author).

10. 21st Century 'Pandemicon': Contagion

Contagion (T1, T4 and T5) is a 2011 apocalyptic disaster-drama directed by Steven Soderbergh. It tracks the spread of a deadly Ebola-type virus and the subsequent breakdown of the social order during a course of a nascent yet rapidly flourishing global public health pandemic. Scientists and science writers have praised its accurate depiction for its thorough depiction of current best practices in global epidemiology. For this achievement and the film's close attention to detail it received the full cooperation of the U.S. Centers for Disease Control and Prevention. Behavior Setting Documented: A large athletic facility is transformed overnight into a makeshift triage center—a modern-day *pandemicon*—functioning as a quarantine control point infirmary for the triaging, treatment, and involuntary incarceration of hundreds, eventually thousands of contaminated victims. The lighting in this night scene casts an eerie glow, as if the transformed armory were some hellish medieval chapel ward hospital in 14th century Europe. Filmed in Hong Kong, Chicago, Atlanta, London, Geneva, and San Francisco. Period/Year: 2011 (Figures 12a

and 12b). Environmental press = high/I reactivity level = low; I competency level = moderate (staff), low (patients)/I proactivity level = high (staff), low (patients).

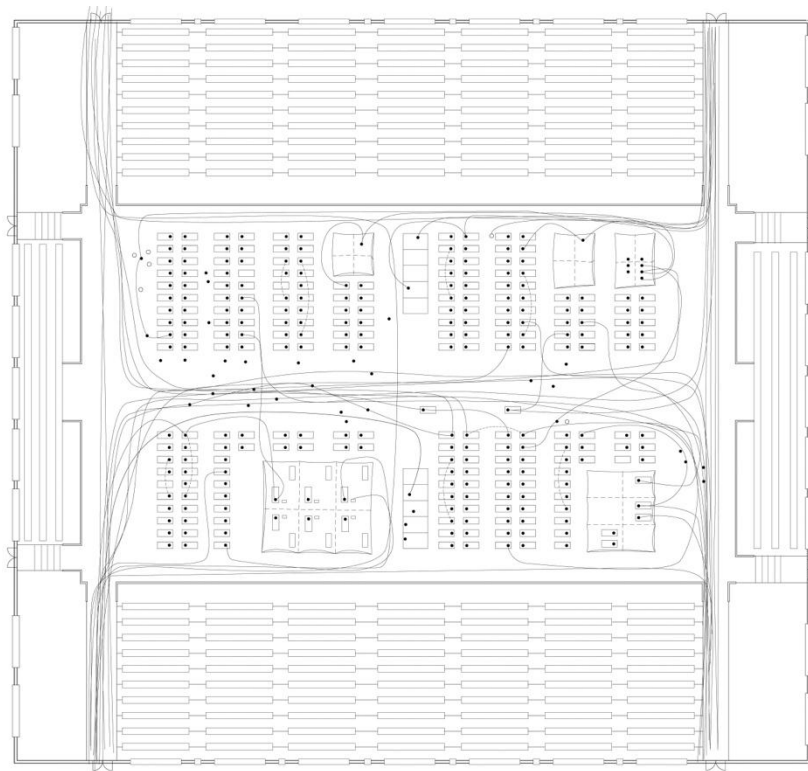


Figure 12a and 12b: Contagion (Image Source: www.netflix.com; Drawing: Author).

SUMMARY AND FUTURE DIRECTIONS

Ten memorable hospital/healthcare scenes drawn from the history of film were presented in chronological order based on the specific period depicted—from the 19th century depiction of utter misery in the waning days of the American Civil War (*Gone With the Wind*, 1939) to the threat of fierce global pandemics (*Contagion*, 2011). This discussion represents an attempt to build upon prior work (Verderber, 2000). The goal has been to argue the case for the pedagogical and knowledge-generative importance of exploring the medium of film—with aim of then carrying this knowledge into the study of person-environment transactions in the real world—and then to carry this knowledge even further into the planning and design of the actual built environment.

Healthcare planners, architects, interior designers, and landscape architects can learn from cinematic precedent. The theme of healthcare, as explored through film, functions as a platform for learning about the ways in which persons experiencing sickness and disease transact with the built environment. Iconic films on the theme of healthcare have been set in hospitals, asylums, outpatient clinics, and many allied physical and landscape settings.

The sampling of films makes it possible for “new” actors and plots to be inserted into old films of any period or theme. The Hollywood studio DreamWorks has experimented with “reworking” existing films through digital insertion and having new actors enter existing scenes in old movies and even move about within them (Miller, 2003). The possibilities are vast in terms of the ways this back-to-the-future technology can be applied to healthcare environments on film. Hollywood, for its part, has usually depicted hospitals across the past century of filmmaking to be places of isolation and extreme institutionalism. These settings have been depicted as sterile, “inhospitable” (even the word itself bespeaks of blatant disdain for the building type), even forbidding places where one only goes as a last resort. Along this line in inquiry, the mental hospital depicted in the classic film ‘One Flew Over the Cuckoo’s Nest’ (1975) has been the subject of considerable analysis in the film community and beyond (Goodfriend, 2012). The 2005 film ‘Asylum’ has also been the subject of a similar critique of film depictions of psychiatric institutions (Neary, 2005).

The chronology of seventy-nine films presented in the preceding discussion spans many periods and building types—some films were produced entirely on backlot stage sets while others were shot nearly entirely on location in actual operating (or since closed) healthcare environments. In the examples analyzed above, the occupants of each highly pressing “world” experience little in the way of personal competency or autonomy. The settings were typically Spartan, lacking in amenity. Furnishings were minimal, as was privacy or personal choice, personal control was minimal to non-existent, and these “care” settings were often overcrowded, too cold, or unbearably hot, as in the case of ‘12 Monkeys,’ ‘The Lost Weekend,’ and ‘Contagion.’

Collectively, the entire body of films that depict healthcare buildings and associated landscapes represents a typological treasure trove. The possibilities are many to examine any number of building types in a compare/contrast manner. This typology, broadly interpreted, includes inpatient acute care hospitals, psychiatric hospitals, rehabilitation hospitals, TB institutions, military hospitals, pediatric hospitals, long term care institutions for the aged, hospices, and emergency trauma care centers, both fixed site and transportable facilities. Outpatient facilities include community care clinics across a broad spectrum of functional types, i.e. primary care, oncology, mental health, kidney dialysis, developmental disability, pediatric, geriatric care, post disaster clinics set up in refugee encampments, and occupational health clinics. More specifically, the ten films sampled above represent but a subset of this broad typology, and it is further specialized due to an emphasis on inpatient care facilities. These ten represent a subset of six variations within an umbrella inpatient hospital type. These are 1. Adapted Open Ward (films 1 and 10), 2. Medical/Surgical Ward (films 2 and 5), 3. Psychiatric Ward (films 3 and 9), 4. Rehabilitation Ward (film 7), 5. Administrative Realm (film 6), and 6. Transportables (films 4 and 8). Commonalities across these six types include the following shared attributes: first, many are variations of ‘classic’ Florence Nightingale-inspired wards prevalent from the mid-19th century through to the advent of WWII (1940). Second, all are in urban locales, and third, all depict a very minimal level of personal privacy amenities, such as privacy curtains or screening devices to block being directly observed and overheard by others, including casual passersby. Differences between the six types include: first, the wards depicted only vary slightly from one another in their bed capacities. Second, the outdoor, open-air public-square-cum-makeshift-ward in the film “Gone With the Wind” is the most extreme type, followed by tent hospitals depicted in films 4 and 8. Third, the amount of natural daylight, and windows, varies considerably across these types, from the brightly day lit open ward depicted in ‘Pearl Harbor’ to the dungeon—like conditions expressed in ‘12 Monkeys.’

Second, this discussion has, it is hoped, demonstrated the usefulness of systematically mining existing theoretical perspectives developed within the field of P-E relations in relation to the theme of healthcare as expressed in the medium of film. Theory perspectives articulated over the past thirty years can indeed function as viable vehicles to study simulated environments, such as those captured on film. Lawton's support-autonomy dialectic, coupled with the Kaplans' emphasis on the critical function of making sense and being involved in the ongoing process of human coping with environmental uncertainty are, together, useful vehicles to help us better understand relationships between occupants and the spaces they occupy. Albeit, these ten films represent somewhat of a random sample of the many dozens of films that could have been used as examples. But regardless, they represent a diverse set of examples from the standpoint of their expressing various degrees of environmental press upon the inhabitants of the behavior setting examined in a given film. The press/competency model of filmedic sample assessment is likely one of many feasible assessment tools worthy of "testing" in further investigations on this subject. It was selected and applied in the preceding discussion because of its relatively broad acceptance in the field. Next logical steps are perhaps to compare across age groups, by gender, diverse cultural backgrounds and sexual orientations, and occupations, to ascertain individual and group differences. Third, it would be worthwhile to examine a single healthcare building type's thematic evolution across time, such as the insane asylum as it has evolved over the past 120 years to today's inpatient behavioral health center. A small but growing literature in the rapidly evolving field of the history and theory of architecture, health, and society exists to support such investigations.

In summary, this technique warrants further investigation in the following contexts:

- As a pedagogical tool for introducing students to the subject of architecture and human health, environmental public health, and in particular as a platform to examine the history and theory of healthcare environments.
- As a framework for the study of person-environment interrelationships in healthcare facilities, fostering perspectives and hypotheses that can then be "tested" in real time and space in actual healthcare settings.
- As a medium to be fused with interactive virtual reality software, as a means to enabling one to "walk through" a given scene in a film, and reconstruct and/or deconstruct content, as if a part of its simulated time and space.

By definition, a virtual environment is synthesized as a collection of 3D geometrical entities. These entities are rendered real-time to provide an interactive walk-through experience. By linking together multiple "movie segments" a user is able to branch onto a different path at selected branching points. Photography or film can be used to construct these scenes. An early example of this approach was the movie-map, in which the streets of Aspen, Colorado were filmed at 10-foot intervals (Chen, 1995). It is now possible to access vast online image databases that can link real places and building sites to their filmedic counterparts, including instances where an actual site or building was used in a specific film. In the mid-1990s, Apple pioneered its QuickTime VR software, a virtual reality extension of its digital media platform. These tools included video sampling, spatial mapping, geographic information systems (GIS), tabular data, textural narratives, and audio. Precedents exist, therefore, and this area of inquiry has existed as a less-than-robust theme within environmental design research for nearly twenty years (Al-Kodmany, 1999; 2002; 2009). Landscape representations can fuse 2D and 3D contextual data about places and buildings that are the subject of corollary statistical analyses (Kreuseler, 2000).

It is possible to virtually "visit" a site/building and its immediate urban context, real, or virtually. Directional navigational tools allow for projecting and 3D "moving-walking" within cinematic space, not unlike an advanced video game with accompanying audio narratives. The

navigator can attach notes and comments along the way. Samples from films from any period can be fused and reformatted to be “real-like” in this manner. Simulation has also become a powerful tool in the realm of physical medicine and rehabilitation. At the Center for the Intrepid, in San Antonio, Texas, a patient, wearing headgear, is able to virtually experience one’s ambulation in “physical” space (Verderber, 2010). There, an environmental scene is projected onto a convex wrap-around screen: it would be just as feasible to project a filmedic-sampled hospital scene upon this surface.

Critics of simulation tools, such as this approach to the mining of films for insight and knowledge, counter that there is no substitute for the real time/space researching and generation of new knowledge for professional practice. As a pedagogical tool, however, virtual training software algorithms now make it possible to train military fighter jet pilots without the trainee ever flying solo in an actual aircraft until late in training. Regardless, as for filmedic sampling, it is this representation of the timelessness of the human condition—for better or worse—which continues to fascinate filmmakers (and audiences) globally. As mentioned at the outset, film has emerged as perhaps the most telegraphic and ubiquitous art form and the theoretical and methodological framework discussed above represents but one of many possible avenues for inquiry. In the future, sampling, fused with advanced spatial analysis software, will yield far richer and meaningful hybrids for exploring, through films, and filmmaking, among other mediums, the inner profundities of person-environment transactions in healthcare settings globally.

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