

gta papers

WAR ZONES

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WAR ZONES

Samia Henni (ed.)

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Introduction: From Colonial Wars to Counterinsurgency Samia Henni

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¹ See, for example, Robert Kolb and Richard Hyde, *An Introduction to the International Law of Armed Conflicts* (Oxford: Hart, 2008).

² See, for example, Ivan Arreguin-Toft, *How the Weak Win Wars: A Theory of Asymmetric Conflict* (Cambridge: Cambridge University Press, 2008); Russell Crandall, *America's Dirty Wars: Irregular Warfare from 1776 to the War on Terror* (New York: Cambridge University Press, 2014); Larisa Deriglazova, *Great Powers, Small Wars: Asymmetric Conflict since 1945* (Washington, D.C.: Woodrow Wilson Center Press, 2014); Peter A. Kiss, *Winning Wars amongst the People: Case Studies in Asymmetric Conflict* (Lincoln: Potomac Books, 2014).

³ The term *pacification* (literally peacemaking) was also used by the French monarchy during the sixteenth century; for instance, during the European wars of religion. On the French pacification and counterrevolution in colonized Algeria during the Algerian Revolution, see Samia Henni, *Architecture of Counterrevolution: The French Army in Northern Algeria* (Zurich: gta Verlag, 2017), 51–78.

⁴ On the policy of “winning hearts and minds,” see, for example, Hannah Gurman, *Hearts and Minds: A People's History of Counterinsurgency* (New York: The New Press, 2013).

In everyday parlance, a war zone suggests a region in which a war is being waged. In the context of international law, a war zone refers to a demarcated area, on land or at sea, within which the right of neutrality is not respected by belligerent nations. ¹ After the end of the Second World War and the beginning of the Cold War, theaters of war became gradually blurred and often undeclared, and the very form of warfare changed significantly. Wars implied not only conventional symmetric models — armed conflicts between two or more military authorities in a defined battlefield — but also asymmetric conflicts and in some cases total wars. Whereas an asymmetric war is an armed struggle among state or non-state powers whose respective military resources are unequal, ² a total war mobilizes all civilian-associated means and ends. However, symmetric, asymmetric, and total wars do not exclude one another; they frequently interact or coexist.

One of the possible instigators of asymmetric wars — also called “irregular wars,” “guerrilla wars,” “modern warfare,” “revolution/counterrevolution,” or “insurgency/counterinsurgency operations” — is colonial warfare, also referred to as “small wars” or “pacification.” ³ A colonial war is a war waged to invade, conquer, and occupy populations, territories, and resources or to defend colonized entities against local and foreign powers. Colonial army officers were not exclusively concerned with military operations, however, but extended their missions to spatial, social, economic, political, and psychological practices. Colonial wars, and thereby asymmetric and total wars, were contingent on the subjugation and unconditional support of the civilian population. In the nineteenth and early twentieth centuries, this noteworthy condition formed an integral part of the “winning hearts and minds” strategy pursued by several European colonial schools; ⁴ in particular, it characterized the paradigmatic French colonial military method, which in turn inspired military powers around the globe, including the United States of America.

The French colonial school was developed by some of the most influential military commanders and colonial administrators serving in France's overseas departments, colonies, and protectorates, including Marshals Thomas Bugeaud in colonized French Algeria; Joseph Gallieni in colonized Senegal, Reunion, Martinique, French Sudan, French Indochina, and Madagascar; and Hubert Lyautey in colonized French Algeria, Indochina, Madagascar, and the French protectorate of Morocco. ⁵ They endeavored to test and design tactics and strategies that annexed the civil realm—including the construction of new settlements—to military directives. These war theories and practices are particularly important to historians of architecture and urbanism because they involve or address the subdivision of territory, the distribution and movement of populations and goods, and the construction of routes, checkpoints, watchtowers, military posts, border fortifications, minefields, landing strips, camps, prisons, hospitals, housing, offices, public buildings, and so on.

In recent decades, critics and historians of the built environment have paid particular attention to the implications of the Second World War and the declared and undeclared war zones of the post-Second World War era in the design of infrastructures and buildings; in the execution of extrajudicial territorial occupations; in the urbanization of warfare; in the mechanisms of destruction, surveillance, and security; in the "Global War on Terror"; and in the mapping of discontinuities and differences among various military schools. ⁶ The present account aims at highlighting the legacies connecting nineteenth- and twentieth-century colonial wars and twenty-first-century counterinsurgency and disclosing the intersections between the history of the built environment, colonial practices, and military operations. ⁷

The military characteristics and objectives of civil policies and landscapes are particularly evident in the French colonies. In the context of architectural history and theory, Lyautey is renowned for the various city plans he developed together with the French architect and urbanist Henri Prost for the Moroccan cities of Casablanca, Fès, Marrakech, Meknes, and Rabat, when Lyautey was Resident General in the

⁵ On the development of the French colonial school, see, for example, Douglas Porch, "Bugeaud, Gallieni, Lyautey: The Development of French Colonial Warfare," in *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, eds. Peter Paret, Gordon Alexander Craig, and Felix Gilbert (Oxford: Clarendon Press, 1986), 376–407.

⁷ In *Architecture of Counterrevolution* (see note 3), 79–98, I highlight another legacy: the transfer of knowledge from the Vichy regime to both colonized Algeria and the French Republic.

⁶ See, for example, Robert Bevan, *The Destruction of Memory: Architecture at War* (London: Reaktion Books, 2007); Jean-Louis Cohen, *Architecture in Uniform: Designing and Building for the Second World War* (Montreal: Canadian Centre for Architecture, 2011); Martin Coward, *Urbicide: The Politics of Urban Destruction* (London: Routledge, 2008); Stephen Graham, ed., *Cities, War, and Terrorism: Towards an Urban Geopolitics* (Malden, MA: Blackwell Publishing, 2004); Graham, *Cities under Siege: The New Military Urbanism* (London: Verso, 2010); Graham, *Vertical: The City from Satellites to Bunkers* (London: Verso, 2016); Derek Gregory, *The Colonial Present: Afghanistan, Palestine, Iraq* (Malden, MA: Blackwell Publishing, 2004); Gregory and Allan Pred, eds., *Violent Geographies: Fear, Terror, and Political Violence* (London: Routledge, 2007); Andrew Herscher, *Violence Taking Place: The Architecture of the Kosovo Conflict* (Stanford: Stanford University Press, 2010); Laura Kurgan, *Close Up at a Distance: Mapping, Technology, and Politics* (New York: Zone Books, 2013); Léopold Lambert, *Weaponized Architecture: The Impossibility of Innocence* (New York: dpr-barcelona, 2012); David Lyon, *Surveillance after September 11* (Cambridge, UK: Polity Press, 2003); Lyon, ed., *Theorizing Surveillance: The Panopticon and Beyond* (Cullompton, UK: Willan Publishing, 2006); Felicity D. Scott, *Outlaw Territories: Environments of Insecurity/Architectures of Counterinsurgency* (New York: Zone Books, 2016); Eyal Weizman, *Hollow Land: Israel's Architecture of Occupation* (London: Verso, 2007); Weizman, *Forensic Architecture: Violence at the Threshold of Detectability* (New York: Zone Books, 2017).

⁸ See, for example, Paul Rabinow, *French Modern: Norms and Forms of the Social Environment* (Chicago: University of Chicago Press, 1989), 104–25.

⁹ Hubert Lyautey, *Le Rôle social de l'officier* (Paris: René Julliard, 1946 [1891]), 37. This and all further translations are by the author.

¹⁰ *Ibid.*, 38.

¹¹ Porch, "Bugeaud, Gallieni, Lyautey" (see note 5), 389.

¹² Gallieni quoted in Hubert Lyautey, *Du Rôle colonial de l'armée* (Paris: Armand Colin, 1900), 16.

¹³ On the "oil spot" policy, see, for example, Etienne de Durand, "France," in *Understanding Counterinsurgency Warfare: Doctrine, Operations, and Challenges*, eds. Thomas Rid and Thomas Keaney (New York: Routledge, 2010), 11–27, here 13–15.

¹⁴ Lyautey, *Du Rôle colonial de l'armée* (see note 12), 16.

¹⁵ During the Algerian Revolution, the French army established the *Affaires indigènes* (AI, Indigenous Affairs), the *Sections administratives spécialisées* (SAS, Special Administrative Sections), and the *Sections administratives urbaines* (SAU, Urban Administrative Sections) after Bugeaud's and Lyautey's institutions. On the spatial role of the SAU and SAS, see Henni, *Architecture of Counterrevolution* (see note 3), 149–204.

French Protectorate of Morocco from 1912 to 1924. ⁸ However, Lyautey's distinction in colonial, military, and political history is most closely associated with his influential theories on the role that colonial military officers can play in "winning hearts and minds" of the civilian population. He wrote several influential notes and articles, including "Du Rôle social de l'officier dans le service militaire universel" (On the social role of the officer in the universal military service) of 1891, and "Du Rôle colonial de l'armée" (On the colonial role of the army) of 1900, in which he urged the army to enlarge its perspectives and purposes.

In his first legendary article, published in the widely read *Revue des deux mondes*, Lyautey criticized the rigidity and inadequacy of French military education and training, claiming that French military schools should provide "a fruitful conception of the modern role of the officer in order to become the educator of the entire nation." ⁹ He also argued that it was essential to transform the deleterious facets of war into advantageous opportunities and thereby to "display, during the course of military service, not only violent and sterile fatigue, but also the broader field of social action." ¹⁰ Lyautey's viewpoint was both informed by his own military experiences and tutors in the French overseas colonies, especially Bugeaud and Gallieni, and influenced by the propositions of Catholic reformers General Louis Lewal and Captain Albert de Mun, who deemed the army an institution capable of reuniting political, social, and religious disparities. ¹¹

Lyautey explained his art of colonial warfare and the military strategies of "winning hearts and minds" in his second key essay, "Du Rôle colonial de l'armée." The newly promoted colonel stated that the prevailing means for achieving pacification — as his tutor Gallieni had claimed in 1898, now quoted in Lyautey's article — was "to employ a combined action of power and politics." ¹² To do so, Lyautey adopted Gallieni's notorious tactic of the *tache d'huile* (known in English as "oil spot" or "ink spot"), which entailed the gradual and methodical occupation of a territory only after overseeing its population and providing basic services, building infrastructure, and enabling economic activities. ¹³ Emulating Gallieni, Lyautey argued, "Whenever incidents of war require one of our colonial officers to act against a village or an inhabited center, he should not lose sight of its primary attention once the subjugation of the inhabitants is obtained, which is to rebuild the village, create a market, and establish a school." ¹⁴ Lyautey continued to develop his colonial civil-military and building methods in the French Protectorate of Morocco, where he created the *Bureaux de renseignements* (Intelligence Bureaus) after the Bureau of Arab Affairs that Bugeaud had established in colonized Algeria. ¹⁵

These methods were further elaborated in the mid-twentieth century during the Second World War, the First Indochina War (1945–1954), and the Algerian Revolution (1954–1962). The colonial school – now called *guerre moderne* (modern warfare) – was practiced and theorized by many French officers, some of whom were well-known for their roles in the infamous Battle of Algiers (1956–1957). Among these leading figures were Generals Paul Aussaresses, Jacques Massu, and Raoul Salan, and Colonels Marcel Bigeard, David Galula, Yves Godard, Charles Lacheroy, and Roger Trinquier. In her book and documentary entitled *Escadrons de la mort: L'École française* (Death squads: The French school), the French journalist Marie-Monique Robin interviewed some of these men and detailed both the methods of warfare applied by the protagonists and the secret export of these theories and practices to North and South America, notably to Argentina, Brazil, Chile, and the United States during the 1950s and 1960s. ¹⁶

According to Colonel Trinquier, “the *sine qua non* of victory in *modern warfare* is the unconditional support of a population. According to Mao Tse-tung, it is as essential to the combatant as water to the fish. Such support may be spontaneous, although that is quite rare and probably a temporary condition. If it doesn’t exist, it must be secured by every possible means, the most effective of which is *terrorism*.” ¹⁷ For Trinquier, there were two systematic ways of obtaining the absolute subjugation of the civilian population: “since it is the population that is at stake, the struggle will assume two aspects: political – direct action on the population; and military – the struggle against the armed forces of the aggressor.” ¹⁸

In line with this thinking, Colonel Galula noted that “pacification would be achieved if we could gradually compromise the population in the eyes of the rebels.” ¹⁹ To meet this goal, Galula drew particular attention to the physical environments of the combatants and described the ideal territorial conditions for both the insurgent and the counterinsurgent. He argued,

“the ideal situation for the insurgent would be a large landlocked country shaped like a blunt-tipped star, with jungle-covered mountains along the borders and scattered swamps in the plains, in a temperate zone with a large and dispersed rural population and a primitive economy. [Whereas the] counterinsurgent would prefer a small island shaped like a pointed star, on which a cluster of evenly spaced towns are separated by desert, in a tropical or arctic climate, with an industrial economy.” ^{20/figs.1 a–b}

¹⁶ Marie-Monique Robin, *Escadrons de la mort: L'École française*, documentary (Ideale Audience, ARTE France, 2003); Marie-Monique Robin, *Escadrons de la mort: L'École française* (Paris: La Découverte, 2004).

¹⁷ Roger Trinquier, *Modern Warfare: A French View on Counterinsurgency* (London/Dunmow: Pall Mall Press, 1964 [1961]), 8. Emphasis in the original.

¹⁸ *Ibid.*, 40.

¹⁹ David Galula, *Pacification in Algeria, 1956–1958* (Santa Monica, CA: RAND Corporation, 1963), 92. Galula is renowned among English-speaking military strategists and historians for his two publications originally published in English that he wrote while he was a research associate at Harvard University’s Center for International Affairs from 1962 to 1967.

²⁰ David Galula, *Counterinsurgency Warfare: Theory and Practice* (Westport, CT: Praeger Security International, 2006 [1964]), 25.

21 Service historique de l'armée de terre (SHAT) 1H 1119 D1, Bureau psychologique, X^e région militaire, "Étude sur les problèmes et les méthodes de pacification en Algérie," January 1957.

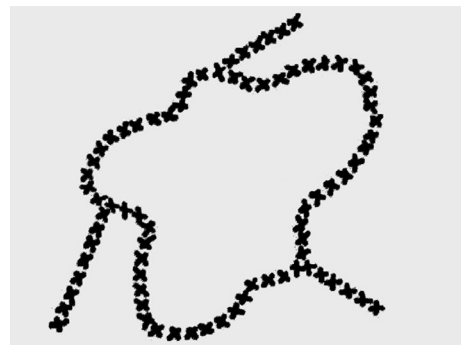
figs.1 a–b Galula's hypothesis on the ideal territorial configuration for the insurgent (a) and the counterinsurgent (b).

22 SHAT 1H 1119 D1, Bureau psychologique, X^e région militaire, Commandement supérieur interarmées, *Guide pratique de pacification à l'usage des commandants de sous-quartier*, 1958, 7.

23 In May 1958, Lacheroy was appointed Head of the Services de l'information et de l'action psychologique (Services of Psychological Action and Intelligence) of Algiers.

24 SHAT 1H 1118 D 3, Conférence du colonel Lacheroy, chef du service d'action psychologique et d'information du Ministère de la Défense Nationale, "Guerre révolutionnaire et l'arme psychologique," July 2, 1957, 4.

In 1957, a detailed military study entitled "Étude sur les problèmes et les méthodes de pacification en Algérie" (A survey on the problems and methods of pacification in Algeria) asserted that pacification should more energetically promote direct contact with the civilian population by means of the initiation of construction sites and the spread of schooling and training of the civilian population.²¹ A year later, the French Bureau psychologique (psychological bureau) of the Joint High Command in colonized Algeria released another military script, *Guide pratique de pacification* (Practical guidelines for pacification). The section on the various methods for implementing pacification reported that "it means making clear to every soldier that he must provide, in addition to a purely military action, a psychological action that is no less important and that is exerted by human contacts."²²



These psychological aspects of modern warfare served to introduce total warfare. In fact, these characteristics were depicted by Colonel Lacheroy in his lecture entitled "Guerre révolutionnaire et l'arme psychologique" (Revolutionary warfare and psychological weaponry), which he delivered to an audience of two thousand officers in the auditorium of the Sorbonne in Paris in 1957.²³ The colonel deemed this type of war as a "total warfare." He argued that it was

*"total, because not only does it mobilize in this effort all of the industrial, commercial, and agricultural powers of a country, but it also takes up in the war effort all women and children and elderly men, all who think, all who live, all who breathe, with all their forces of love, all their forces of enthusiasm, all their forces of hate, and it throws them into war. This is the new reality. Total war, because it takes the souls as well as the bodies and it yields them to the obedience of the war effort."*²⁴

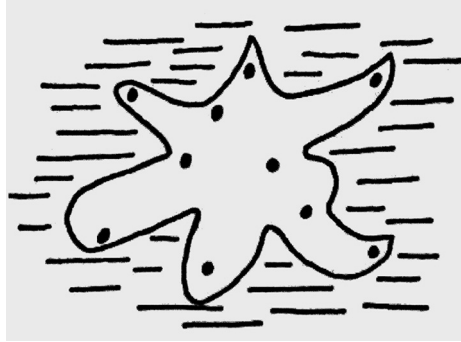
Following Lacheroy's statement, every individual was considered a potential suspect, and war zones became no longer restricted to conventional territorial boundaries but rather encompassed the whole territory and entire population.

French military practices and theories in colonized Algeria inspired and influenced many military authorities around the world during the twentieth and twenty-first centuries, including the U.S. Army. Since the invasion of Iraq in 2003, the United States has expressed overt interest in the French colonial military practices and theories tested in Indochina and Algeria—notably, the urban warfare methods of the Battle of Algiers portrayed in the mythic 1966 movie *La battaglia di Algeri*, directed by the Italian filmmaker

Gillo Pontecorvo and screened at the Pentagon in 2003.²⁵ Colonial protocols traveled from the colonies, protectorates, and overseas territories and departments to other parts of the world, where they were integrated and enforced.

²⁵ Michael T. Kaufman, "The World: Film Studies; What Does the Pentagon See in 'Battle of Algiers'?" *New York Times*, September 7, 2003.

Galula's traces can be found in the pages of the U.S. Army field manual *FM 3-24*, entitled *Counterinsurgency*, which the Department of the Army released in 2006 to direct U.S. soldiers fighting in Iraq and Afghanistan. As Lieutenant General and U.S. Army Commander David H. Petraeus and Lieutenant General and U.S. Marine Corps Deputy Commander James F.



Amos note in their foreword, the purpose of the guidelines was to fill a doctrinal gap of twenty years for the Army and of twenty-five years for the Marine Corps.²⁶ The two lieutenant generals defined *counterinsurgency* as "a mix of offensive, defensive, and stability operations conducted along multiple

²⁶ David H. Petraeus and James F. Amos, *FM 3-24: Counterinsurgency* (Washington, D.C.: Department of the Army, 2006), Foreword, n.p.

lines of operations. It requires Soldiers and Marines to employ a mix of familiar combat tasks and skills more often associated with nonmilitary agencies. The balance between them depends on the local situation."²⁷

²⁷ Ibid.

Galula's writing is frequently cited in the manual's second chapter, entitled "Unity of Effort: Integrating Civilian and Military Activities." Beginning with an opening citation from Galula's book *Counterinsurgency Warfare*, it states, "Essential though it is, the military action is secondary to the political one, its primary purpose being to afford the political power enough freedom to work safely with the population."²⁸ The chapter discusses the ways in which civil and military activities and organizations should be integrated, reporting and again citing Galula's argument that in this form of warfare "the soldier must be prepared to become ... a social worker, a civil engineer, a schoolteacher, a nurse, a boy scout. But only for as long as he cannot be replaced, for it is better to entrust civilian tasks to civilians."²⁹ In some declared and undeclared war zones, however, military officers were not replaced by their civilian counterparts but continued to influence the lives of civilians and the destruction and construction of borders, walls, camps, infrastructure, settlements, villages, and cities.

²⁸ Petraeus and Amos, *FM 3-24* (see note 26) 2/1.

²⁹ Ibid., 2/9.

In 2014, the U.S. Department of the Army issued a second version of the field manual *FM 3-24*, with a new title: *Insurgencies and Countering Insurgencies*. The revised manual redefines *counterinsurgency* as "comprehensive civilian and military efforts designed to simultaneously defeat and contain insurgency and address its root causes."³⁰ This definition is similar to what Galula,

³⁰ U.S. Army, *FM 3-24/MCWP 3-33.5: Insurgencies and Countering Insurgencies* (Washington, D.C.: Headquarters, Department of the Army, 2014), 1–2.

and other French colonial military officers before him, had proposed and theorized. However, references to these protagonists and to colonial doctrines, geographies, and terminologies were completely suppressed in the U.S. guidebook of 2014, despite the fact that the very logic of the civil-military operations had not been altered. Consequently, the unquoted and unreferenced colonial military protocols, deeply embedded in the U.S. field manual for contemporary counterinsurgency, became a norm.

The strategic rubrics of pacification, *guerre moderne*, and counterinsurgency belong to what Roland Barthes called *écriture cosmétique* (cosmetic writing), whose scope is not to communicate but to intimidate. In “Grammaire africaine” (African grammar), published in his 1957 book *Mythologies*—printed during the Battle of Algiers—Barthes argues that the official terminology used by the French representatives of colonial African affairs is purely axiomatic, a mask designed to divert attention from the nature of the war and cover the real facts with a “noise” of language. According to Barthes, this grammar is both ideologically burdened and politically loaded. In this context, he defines the term war as follows:

“War. — The goal is to deny the thing. For this, two means are available: either to name it as little as possible (most frequent procedure); or else to give it the meaning of its contrary (more cunning procedure, which is at the basis for almost all the mystifications of bourgeois discourse). War is then used in the sense of peace, and pacification in the sense of war.” ³¹

To write about “War Zones” thus also means to question cosmetic writings over the course of the twentieth and the twenty-first centuries, survey the historical involvements of architects in battlefields, examine the transfer of military practices and theories to civil realms, explore the ways in which wars have reshaped cities and human lives, understand the effect of symmetric and asymmetric wars on the development of architectural elements and the transformation of built environments, investigate the physical and psychological impacts of a besieged city, chronicle the challenging conditions for reconstructing a refugee camp, trace the foundation and protraction of the state of emergency, offer possible methodologies for mapping occupied and contested territories, and reveal the material or immaterial architecture of drone warfare.

³¹ Roland Barthes, “African Grammar,” in *The Eiffel Tower and Other Mythologies* (Berkeley: University of California Press, 1997), 103–9, here 105.

Note: Many thanks to Alessandro Petti for reviewing one of the contributions.

Designing within and for War Zones

Jean-Louis Cohen

Direct investigations of the interrelation between architecture and war are a relatively recent type of collective endeavor, as the most significant historical interpretations focus essentially on the theme of reconstruction. ¹ The project I have developed on the Second World War under the title *Architecture in Uniform* began with the frustration I felt when attending the conference *Tra guerra e pace: società, cultura e architettura nel secondo dopoguerra* (Between war and peace: Society, culture, and architecture after the Second World War) held in Turin almost exactly twenty years ago. ² Nearly all the contributions dealt with the minute aspects of *pace*, and almost nothing was said about *guerra per se*, as if the two realms were completely separated by a tight yet invisible membrane and the more precise relationship of architecture with the conflict remained taboo.

Yet, this relationship is far from being a feature of modern times. Architecture has been involved in warfare since its origins as an intellectual and material practice in Antiquity. To take only the most obvious example, Vitruvius devoted an entire chapter of his *De architectura* to the design of military machines, which were exquisitely drawn in Claude Perrault's seventeenth-century edition. ^{fig.1} Renaissance architects such as Michelangelo and Antonio and Giuliano da Sangallo – and even artists – drew fortification plans. The differentiation between civilian and military engineers was accomplished only in the late eighteenth century, when the École des Ponts & Chaussées was created in Paris.

In Search of Zones

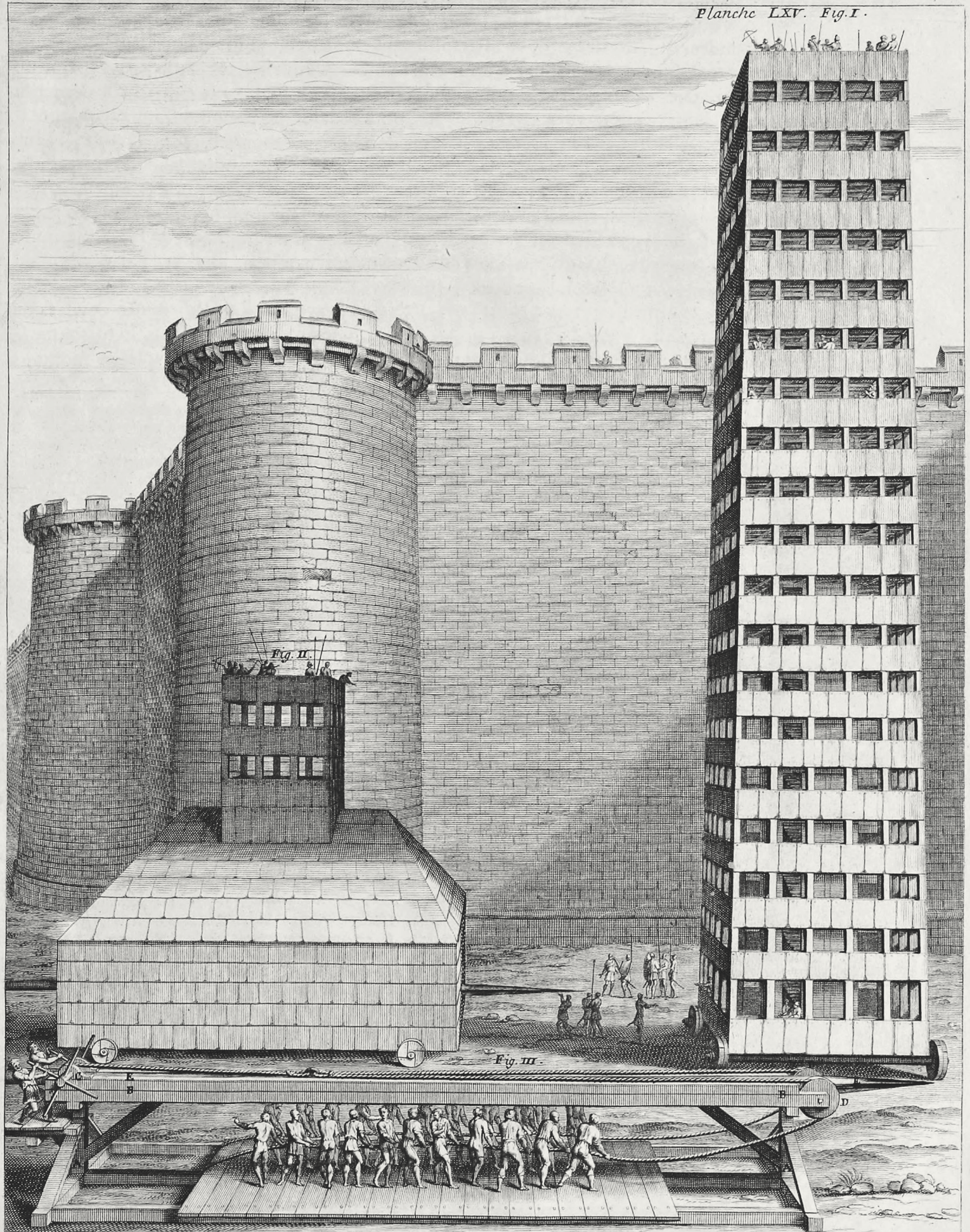
I would like to focus first on this publication's ingenious title, "War Zones," and on the eponymous symposium "Wars and Architecture: Forms of Construction and Destruction in War Zones" that Samia Henni convened at the Institute for the History and Theory of Architecture, ETH Zurich, on June 2–3, 2017. The notion of a "zone" is common in the semantic field of armed conflict. A *war zone* can be defined as a precise subdivision within a theater of war; it is the area in which active combat takes place, along with any peripheral support territories. In warfare, specialized zones are devoted to specific operations, many of which were defined by the American armed forces during the Korean and Vietnam wars: for instance, "landing zones" or "dropping zones" – not to mention the "forbidden zones" that tend to proliferate in the contemporary world. Zones have also become long-lasting legacies of previous wars, guaranteeing the status quo for decades, as in the case of the Demilitarized Zone created on the Korean Peninsula after the

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¹ See for example Werner Durth and Niels Gutschow, *Träume in Trümmern: Planungen zum Wiederaufbau zerstörter Städte im Westen Deutschlands, 1940–1950* (Braunschweig: Fried, Vieweg & Sohn, 1988); Jeffry M. Diefendorf, *In the Wake of War: The Reconstruction of German Cities after World War II* (New York: Oxford University Press, 1993); Carola Hein, Jeffry M. Diefendorf, and Ishida Yorifusa, eds., *Rebuilding Urban Japan after 1945* (New York: Palgrave Macmillan, 2003); Nicholas Bullock, *Building the Post-war World: Modern Architecture and Reconstruction in Britain* (London: Routledge, 2002).

² Patrizia Bonifazio, Sergio Pace Michela Rosso, and Paolo Scrivano, eds., *Tra guerra e pace: società, cultura e architettura nel secondo dopoguerra* (Milan: Franco Angeli, 1998).

Planche LXV. Fig. I.



1953 Panmunjom armistice, which is still in effect today. In post-Nazi Germany the Allies carved out occupation zones that divided the east and west of the country for several years, before giving way to two competing states in 1949. In Austria, the transition from occupation zones to full restoration of the unified state lasted six more years.

Born in the realm of war, zones have not been confined to the geography of armed confrontation. Since the advent of artillery, specific zones have been defined in the territories surrounding fortresses and urban fortifications, prescribing differentiated rules for the height and the building techniques of permanent constructions or allowing only temporary structures, which were faster to dismantle in the case of a looming siege. When the first law on the expansion of cities was written in 1875, in the context of the unification of the German Empire, zones took on new meaning. Urban plans divided cities into areas where precise uses and morphologies were meant to be preserved or implemented, with varying degrees of sophistication. This innovative practice was first theorized by the civil engineer Reinhard Baumeister in his handbook *Stadterweiterungen in technischer, baupolizeilicher und wirtschaftlicher Beziehung* (Urban expansion in terms of technology, building regulations, and economics), published in 1876.³ The practice became standard in the expansion of European cities, allowing for the control of uses and densities, and found a more elaborate formulation in the plans conceived for North American cities at the turn of the twentieth century.⁴

In this respect, the contribution of what we continue by a regrettable intellectual inertia to call the “modern movement” has not been the invention of functional zoning, which had already a long history, but the reduction to simplistic slogans of a complex urban management tool, which had been continually refined by Baumeister’s colleagues and followers in charge of city planning and management. The codification of the conclusions reached during the 1933 Congrès international d’architecture moderne (CIAM) in Athens, devoted to the “functional city,” was further simplified in Le Corbusier’s 1943 *Athens Charter*. In his preface to this publication, novelist and playwright Jean Giraudoux revealingly displaces the notion of zone from the functional realm to the social one, when he writes,

*“the brilliance of the epoch and its sordidness will affect both the bourgeois and the working man alike, according to the whim or the routine of the municipalities. There will be a sordid zone of work and thought and a brilliant zone, and, bound by a lamentable human and national protocol, luminous beings and opaque beings will rub shoulders on the same level.”*⁵

fig.1 Claude Perrault, siege machinery, illustrations for *Les Dix livres d'architecture de Vitruve*, 1673.

³ Reinhard Baumeister, *Stadterweiterungen in technischer, baupolizeilicher und wirtschaftlicher Beziehung* (Berlin: Verlag von Ernst & Korn, 1876).

⁴ See Franco Mancuso, *Le vicende dello zoning* (Milan: Il Saggiatore, 1978).

⁵ Jean Giraudoux, introduction to *The Athens Charter*, by Le Corbusier, trans. Anthony Eardley, with a new foreword by Josep Lluís Sert (New York: Grossman Publishers, 1973 [1943]), xv–xix, here xix.

Zones have survived the demise of functionalism, for instance in post-Second World War France, where a spectrum of technocratic procedures were concocted to denote territories in development and the specific rules to be applied to them. This prescriptive obsession led to an urbanism based on a collection of Z-words: ZAC – *zones d'aménagement concerté*, ZAD – *zones d'aménagement différé*, ZUP – *zones à urbaniser en priorité*, and later ZUS – *zones urbaines sensibles*, or ZEP – *zones d'éducation prioritaires*, in the context of public policies aimed at solving burning social issues. ⁶ This practice has been parodied by the movements today fighting megalomaniac infrastructure projects, creating in this insurgent context their own ZAD, or *zones à défendre*.

⁶ See Kenny Cupers, *The Social Project: Housing Postwar France* (Minneapolis: University of Minnesota Press, 2014).

⁷ Guillaume Apollinaire, "Zone," in *Alcools* (Paris: Mercure de France, 1913), 6.

fig.2 View of the *zone non aedificandi* surrounding Paris, section facing Malakoff, 1941.

Another, more poetic use of the term *zone* appears in Guillaume Apollinaire's poem "Zone" of 1912. The allusion he makes in his nostalgic/futurist message, in which the Eiffel Tower is "fed up living with antiquity," was fully understandable for all his Paris contemporaries. ⁷ Along the fortified wall built in the early 1840s, the *zone non aedificandi* was territory meant to be opened up for gunfire in the case of war. **fig.2** Still strangling Paris in Apollinaire's day, the *zone* housed fragile shanties and cabarets and would soon, in the 1920s, become home to 50,000 persons. Created in expectation of future wars with Germany and made obsolete by long-range artillery and aviation, its ring shape has determined the urban form of central Paris to this day, even after its replacement by a belt freeway in the 1970s. ⁸

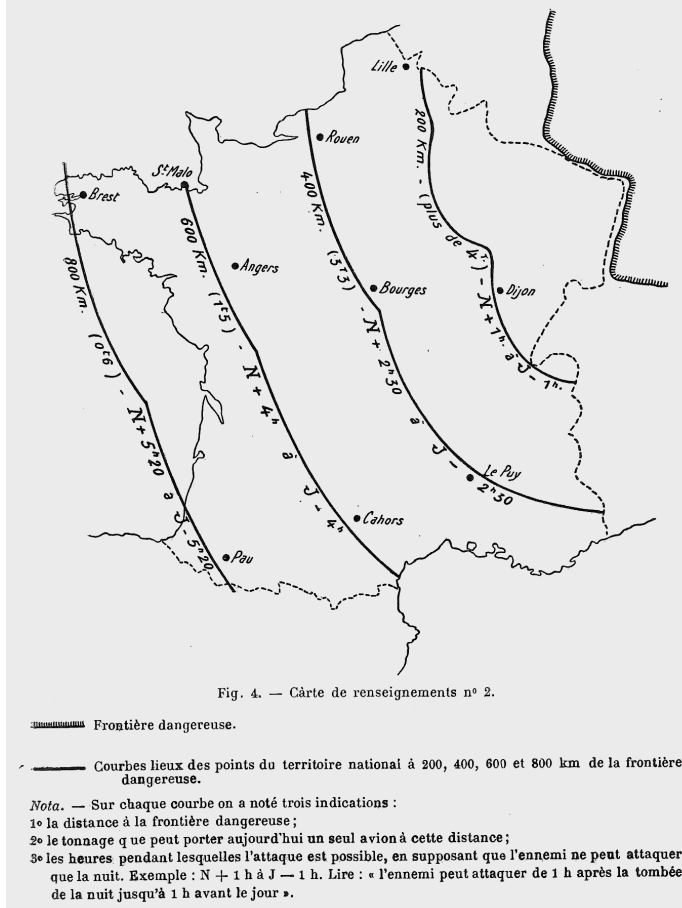


⁸ See Jean-Louis Cohen and André Lortie, *Des fortifs au périf: Paris, les seuils de la ville* (Paris: Picard/Édition du Pavillon de l'Arsenal, 1992).

⁹ General Giulio Douhet, *Il dominio dell'aria: saggio sull'arte della guerra aerea* (Rome: Stabilimento poligrafico per l'amministrazione della guerra, 1921). In French: *La Guerre de l'air* (Paris: Les Ailes, 1932). In German: *Luftherrschaft* (Berlin: Drei Masken Verlag, 1935). In English: *The Command of the Air* (New York: Coward-McCann, 1942). In Russian: *Gospodstvo v vozdukh* (Moscow: Voenizdat, 1936).

The Dissolution of the Front

The changes introduced by modernity in the realm of warfare have had, from the beginning, a precise spatial agency. Since the First World War, the main revolution has been the emergence of strategic air bombing (first attempted before 1918), which was theorized by the Italian air general Giulio Douhet in his classic book *Il dominio dell'aria: saggio sull'arte della guerra aerea*, first published in 1921 and rapidly translated into many languages, including Japanese. ⁹ Following Douhet, French Lieutenant-Colonel Paul Vauthier, whose books were no less popular internationally, indicated most clearly in his 1930 book *Le Danger aérien et l'avenir du*



Hence the concept of "front" became if not obsolete, then at least a limited category in the geometry of modern war theaters. Since the Spanish Civil War, all conflicts that have relied on the use of aviation—even more so those using surface-to-surface missiles—have confirmed Vauthier's visionary interpretations. The French officer was eager to find architectural strategies that promised to improve the resilience of cities during an air war, and he became a vocal agent of Le Corbusier's schemes, which he published in his book. Symmetrically, the author of the Plan Voisin for Paris and the Ville radieuse put Vauthier's endorsement of his designs to wide use in his own communications.¹¹ But the relevance of *Le Danger aérien* went well beyond this mutual acknowledgment. Vauthier insisted on the importance of civilian defense and the implementation of deception through camouflage, including at the urban level. In this respect, he defined several of the main fields in which architects were active during the Second World War, including the design of bunkers for civilians and the reinforcement of existing buildings, as well as the design of fake buildings, landscapes, and city parts meant to fool bomber crews. fig. 4

pays how the geography and the topography of war had changed:

"the airplane has little concern for lines on the ground; it can cross borders to bring the battle into enemy territory; after that, it returns to its own field. All territory within range of the enemy's aircraft can suddenly find the enemy in the sky above, despite the presence of troops to guard the ground; the entire region subject to the insult of enemy aircraft is in fact an aerial border. But the crucial fact is that this border is no longer a line; it is a surface." 10/fig. 3

fig. 3 Lieutenant-colonel Paul Vauthier, zones of the French territory within reach of German aviation, plate from *Le Danger aérien et l'avenir du pays*, 1930.

10 Lieutenant-Colonel Paul Vauthier, *Le Danger aérien et l'avenir du pays* (Paris: Editions Berger-Levrault, 1930), ix–x. Translation by the author.

11 Le Corbusier, *La Ville radieuse* (Boulogne: Editions de l'Architecture d'Aujourd'hui, 1935), 171.

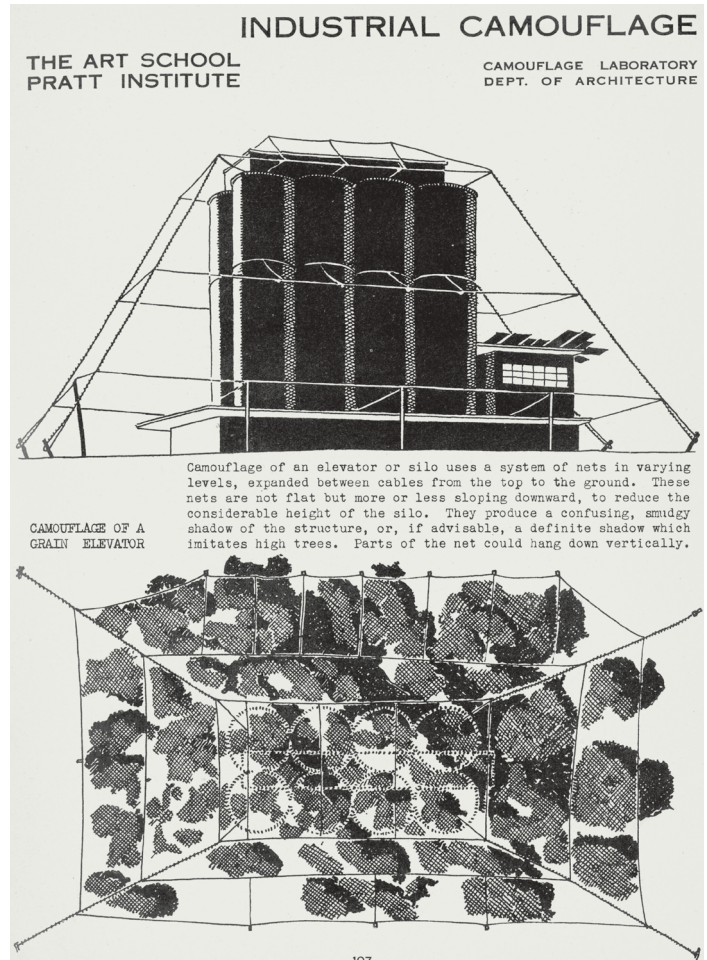
The Scope of Total War

Local wars—that is, wars that are geographically limited and involve belligerent states—differ from worldwide wars, which extend to a broad range of theaters. More significant, wars fought by professionals differ from total wars, in which all strata of society—all age groups, genders, and social classes—are mobilized. The total wars that took place from 1914 to 1918 and then from 1939 to 1945, with their curtain openings in China and Spain, are now viewed as a single continuous war spanning thirty years and engaging populations, disciplines, and professions in multiple ways.

The Second World War was characterized by a widespread use of architecture and architects. The engagement of the latter, however, started with rather banal construction programs; that is, with professionals continuing their business as usual. The imperative for quality seems to have taken on an almost ethical dimension, as suggested by the journal of the Royal Institute of British Architects (RIBA) in 1939: "We must make it absolutely clear, to ourselves no less than to others, that first class architecture is necessary in war, not just for our fun or to line our pockets, but because good buildings can help to win the war."¹²

The longing for good design was further expressed by E. J. Carter, librarian of RIBA, upon the occasion of *Britain at War*, an exhibition at New York's Museum of Modern Art a few months before the Japanese bombing of Pearl Harbor. In the exhibition catalogue, Carter writes, "It is something in war time to have the machines of civil defense neatly designed. This neatness is a sign of order and of something clean and good which survives the inevitable disorder and mess of war."¹³ A visit to the formerly forbidden zone of Peenemünde, the rocket production and testing range the Nazis created on the shores of the Baltic Sea, led me in 2010 to comparable considerations. Despite

fig. 4 Konrad Wittmann, camouflage of a grain elevator, plate from *Industrial Camouflage Manual*, 1942.



12 "What Architecture Can Do," *RIBA Journal* 46, no. 30 (1939): 996.

13 E. J. Carter, "Architectural Reconstruction and War-Time Forms," in *Britain at War*, ed. Monroe Wheeler (New York: Museum of Modern Art, 1941), 74.

the fact that this enclave, carved into a beautiful landscape of dunes and pine forests, was off-limits to the general population, and therefore not meant for visual propaganda, it was exquisitely designed, as if it were embodying a drive toward an aesthetic perfection perceptible to only a tiny minority. And it has survived war.

What the Second World War revealed, through the mobilization of several generations of professionals in a wide range of positions, was the extent and variety of the usable expertise they brought to the war effort, both on the front and at the rear. Technological expertise, especially in the field of construction, proved useful for the design and implementation of engineering works, military buildings, and the installation of wartime facilities in previously civilian premises. Such efforts were complemented by materials expertise, which manifested itself in at least two domains: adapting existing civilian parts, components, or processes for military use; and searching for new materials and manufacturing techniques, such as plastics and glues. In times of scarcity, when the search for substitution solutions may well prove decisive, practical knowledge is a most precious commodity.

The visual expertise acquired by professionals trained to observe and record buildings and landscapes, and to interpret their representation, became essential in a war where detailed knowledge of the enemy's territory was a necessary condition for the planning and monitoring of operations. Paul Virilio underlines the importance of "transparency, ubiquity, [and] total and instant knowledge."¹⁴ Visual competence has several dimensions, one of them being artistic expertise put to good use in the realm of camouflage design, which remains one of most extraordinary fields of war-related design, even as architects replaced the painters who were drafted into the first units engaged during the First World War, tasked with producing dazzling works for their navies, and frontline art for their land forces.¹⁵

The other fields in which the expertise gained at school or in practice was put to good use are communications and logistics. Architects were recruited to work in the countless offices opened for the design of posters or exhibitions, introducing in the discourse of propaganda radical aesthetics hitherto limited to the space of art galleries. The most lucid evaluation of this engagement was written in 1943 by the young German architect Gerhard Kallmann, who was working in London.¹⁶ Last, but not least, in an extremely bureaucratized war, the practical knowledge of organization acquired by architects familiar with the management of building sites proved to be most precious in the development of logistics, a key contribution of those years.¹⁷

¹⁴ Paul Virilio, *Bunker archéologie* (Paris: Editions du Centre Georges Pompidou, 1975), 29.

¹⁵ See, for example, Henrietta Gooden, *Camouflage and Art: Design for Deception in World War II* (London: Unicorn Press, 2007); Timothy Newark, *Camouflage: Now You See Me, Now You Don't* (London: Thames & Hudson, 2007).

¹⁶ G. S. Kallmann, "The Wartime Exhibition," *The Architectural Review* 94, no. 562 (1943): 95–106.

¹⁷ Alan Gropman, ed., *The Big "L": American Logistics in World War II* (Washington, D.C.: National Defense University Press, 1997).

All these positions have ethical dimensions attached to them, their concrete exercise at the service of the belligerent states and in response to specific programs having different connotations. To take only the most obvious example, within the same generation there is significant distance between the work of young German functionalists who were active in designing officer's quarters or hangars for the Luftwaffe and those designing gas chambers for the concentration camps.

Lasting Effects

In a total war, citizens are not only drafted and used by the military, but every aspect of professional life is transformed, generating lasting experiences. Much has been written about the peacetime recycling of wartime technologies, which has almost become a field per se. This recycling has taken many forms, from the use of existing hardware — the term *surplus* became popular soon after the Second World War — to the transfer of new materials and the transformation of entire production lines, as in the successful case of the AIROH houses manufactured by British aircraft makers. Richard Neutra, who spent the war in Los Angeles, a city widely transformed by the production of aircraft and naval vessels, signaled in a text on "Housing, Defense and Postwar Planning" that "New industrial plants and implementation, new useful methods of production and products, improvised substitutes as ancestors of valuable new materials, above all new skills and attitudes have been the best residuum of wars."¹⁸

¹⁸ Richard Neutra, "Housing, Defense and Postwar Planning," undated typescript, in Dion and Richard Neutra Papers, University of California, Los Angeles, Box 176, Folder 4, 1.

¹⁹ Eeva-Liisa Pelkonen, *Eero Saarinen: Shaping the Future* (New Haven: Yale University Press, 2010), 48.

²⁰ The earliest mention is Mike Davis, "Berlin's Skeletons in Utah's Closet," in *Dead Cities and Other Tales* (New York: New Press, 2002), 64–83. See also Enrique Ramirez, "Erich Mendelsohn at War," *Perspecta* 41 (2008): 83–91.

Among the legacies of involvement, an important one for the development of architecture was camaraderie, relationships shaped in the drafting office but also in the trenches and in the cockpits of airplanes. A classic example is the meeting in the same U.S. Army Air Forces unit of Elliot Noyes and Thomas Watson Jr., son of the founder of IBM, which would result in endless designs by the former for the latter.¹⁹ Perhaps the most fundamental effect of the Second World War on architecture has been the development of research. The participation of Erich Mendelsohn, Konrad Wachsmann, and Antonin Raymond in the methodical preparation of the cruel incendiary air raids over Japan has long been acknowledged.²⁰ But the impact of the experience of operational research should also be mentioned, as it generated a new awareness of usage and, hence, new expectations for design.

An explicit discussion of this important phenomenon is the article physicist J. D. Bernal wrote in 1946 for the *RIBA Journal* after having been engaged in a series of war-time programs:

"in the early days of the war, the whole emphasis of science in war was science in relation to scientific gadgets. ... But, as the war progressed, it became noticed that it was not so much the scientific gadgeteering side which was important; it was the scientific approach to the problems raised by the military situation generally; problems raised in the factory, production problems, planning problems in the preparation of war weapons, and finally, towards the middle and the end of the war, the problems of actual operations."

Noting, for instance, that architects had been unaware of (or uninterested in) the work of women in the domestic interior, Bernal sketched a program:

"the real problem is to analyse bit by bit what the operations that occur in any building are and to see how these operations can most advantageously be carried out so as to give the minimum cost, the maximum speed and the minimum labour hours on the job itself." The conclusions were clear:

"When the rate of change in society goes beyond a certain amount, it cannot be left to the individual genius of the architect, though he may be himself a scientist; you have to bring in the scientist, because he is the person who weighs up and assesses the result of any change." ²¹

An example of this attitude relates to camouflage. David Medd, a British architect who worked for Stirrat Johnson-Marshall at the Camouflage Development and Training Centre at Farnham, Surrey, during the war and who would subsequently work on prefabricated schools for Hertfordshire, recalled the constant to-and-fro between the drawing board, production facilities, and operations in the field that was part of the wartime projects:

"We, as designers, were part of a chain in a complete cycle which didn't repeat, but evolved as it went round: policy, thinking, designing, making, using, new policy, rethinking and so on. The designer was a link in a complete chain, not a detached component." ²²

Hugh Casson, also engaged in disguising landscapes and buildings, wrote as early as 1944 that:

"camouflage can help – not in its narrow war-time idiom – but in the broader sense, as the scientific use of texture, tone and colour, to complement instead of to disguise form. The handling of colour in this way to create accents or to emphasise different materials, planes or changes of direction, has been greatly developed recently in interior decoration. Its possibilities in the street have never – at last in this country – been explored. Used with imagination, control and the knowledge gained from war-time experience, it could surely be of the greatest

²¹ J. D. Bernal, "Science in Architecture," *RIBA Journal* 53, no. 5 (1946): 155–58, here 155, 158.

²² David Medd, "Stirrat Johnson-Marshall, a Personal Tribute," *Performance*, (April/May 1982): 67–70, here 69.

and most stimulating assistance to those who will be faced with the task of bringing coherence and vitality into the post-war street scene." 23

23 Hugh Casson, "Art by Accident: The Aesthetics of Camouflage," *The Architectural Review* 96, no. 573 (1944): 63–68, here 68.

Casson put his remarks to good use a few years later when designing the colorful Festival of Britain 1951 in London.

Thus, the effect of the Second World War was not only technological but transformative. The echoes of other consequences, documented through interviews or correspondence, can be found in later generations, especially among the young architects or students involved in the late colonial wars, although the

fig. 5 Poster for Alain Resnais's film *Muriel*, 1963.

extent of engagement achieved from 1939 to 1945 was not again reached. The French war in Algeria, for example, in which youth of all class strata were drafted, generated serious reactions at the École des Beaux-Arts in Paris, where some students, such as Serge Magnien, were jailed for refusing to join the army. Others returned from the conflict deeply disturbed by the French repression and forever changed by memories or guilt they could not let go, an attitude that can be best perceived in Alain Resnais's film *Muriel, ou le temps d'un retour*, released in 1963, in which the allusion to torture is clear.



Among the students left traumatized by the war was Bernard Huet, who would become upon his return from Algeria one of the moving forces in the revolt against the old école. Documenting the effects of wars such as Algeria or Vietnam on the public consciousness and on the biographies of the young participants who were forever transformed would unquestionably be a useful program for further research.

From the gta Archives

Compiled and commentated by Stanislaus von Moos and Daniel Weiss



1 Hans Schmidt, *Zur Erinnerung an den Aktivdienst 1939* (In remembrance of active military service in 1939); colored pen drawing; Bequest of Hans Schmidt, gta Archives, ETH Zurich.

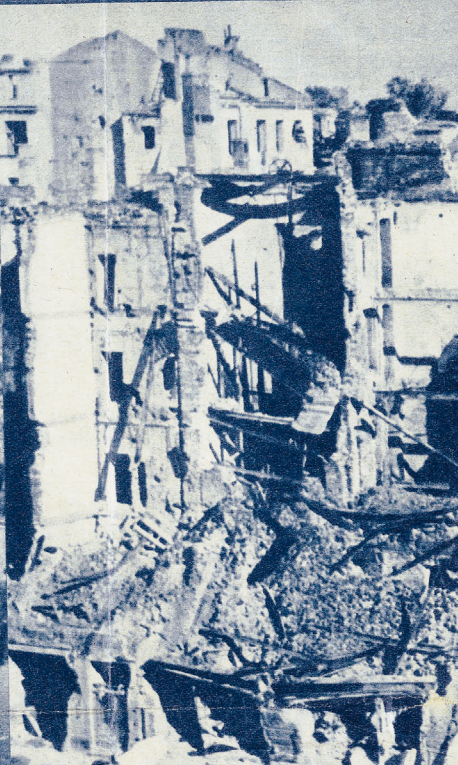
Hans Schmidt, founding member of the CIAM and one of the leading figures of the Neues Bauen in Switzerland, had been active in the Soviet Union from 1930 to 1936. Back in Basel, he followed the call-up for military service with the announcement of wartime mobilization in 1939, as many of his colleagues did. The drawing shows a formation of soldiers with the Basel Barracks as background. As a cofounder of the communist Partei der Arbeit der Schweiz (Swiss Party of Labor), Schmidt found himself increasingly isolated in the years after the Second World War and in 1956 accepted a position at the Deutsche Bauakademie in East Berlin.

2 "Ein Basler als Berater für den Wiederaufbau zerstörter Städte" (A Basel citizen as an advisor for the reconstruction of destroyed cities); double-page spread from an illustrated Swiss magazine, c.1947; Bequest of Hans Schmidt, gta Archives, ETH Zurich.

Der Boden der Stadt - Das



Die Beseitigung der Trümmer zerstörter Häuserblöcke wird die Anlage von Straßen in der Breite von etwa 100 m ermöglichen, wobei die Leitungen unter der bisherigen Straße bleiben.



Eine heroische Konzeption nannte Polens Wiederaufbauminister den noch im Kriege gefaßten Beschluß, Warschau wieder aufzubauen; denn die Stadt war damals eine Wüste, ihre Häuser lagen

Ein Basler als Berater

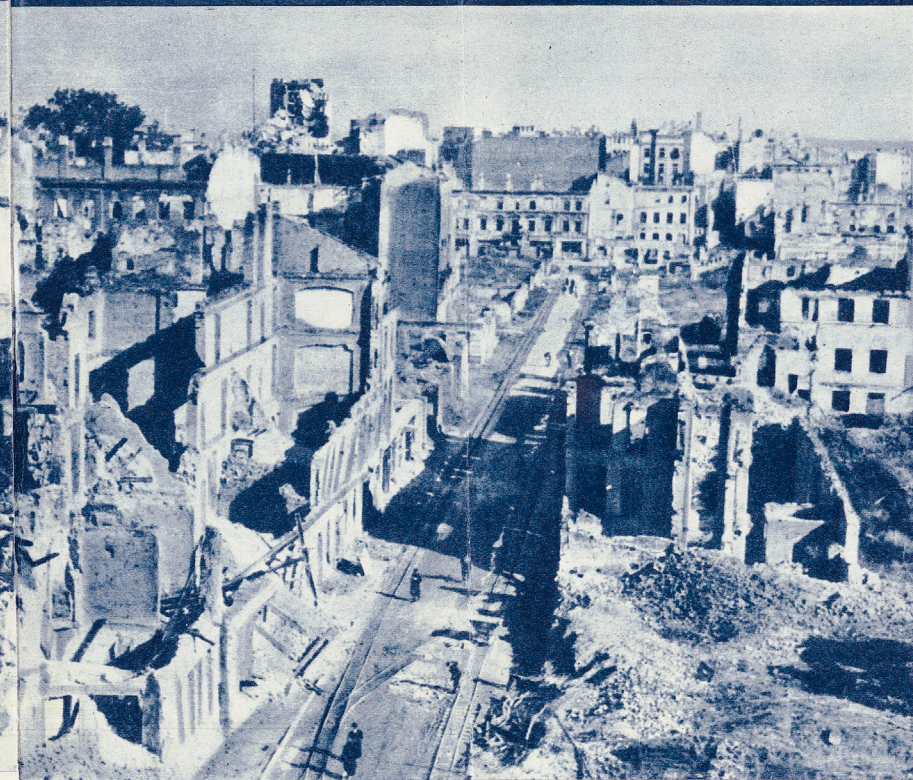
«Sagen Sie es in der Schweiz, daß die Ideen Hans Bernoulli bei uns in Warschau leben», bat mich Professor M. Kaczorowski Polens Wiederaufbauminister. Das war im Vorfrühling 1946, ein Jahr nach Kriegsende, als die von den Nazis zum Untergang verurteilte Hauptstadt Polens langsam zu neuem Leben zu erwachen begann. 32 888 Häuser waren völliger Zerstörung anheimgefallen, kilometerweit lagen die Trümmer so hoch, daß oft nicht einmal zu erkennen war, wo früher Häuser gestanden und wo Straßen sich verschollen, geflohen, in Gefangenschaft warteten, bis alle Eigentumsverhältnisse abgeklärt sein würden. Es mußte rasch gehandelt werden. Die «Verordnung vom 26. Oktober 1945 betr. Bodeneigentum und Bodennutzung im Gebiet der Stadt Warschau» schuf die rechtlichen Voraussetzungen für den Wiederaufbau der Stadt. Das Eigentum sämtlicher in den Gemarkungen der Stadt liegenden Grundstücke ging auf die Stadtgemeinde über. Die Stadt wurde Grundherrin. Die bisherigen Eigentümer aber durften den Boden in Erbpacht weiter nutzen, und die auf den Grundstücken stehenden Bauten blieben in der Regel im Eigentum der bisherigen Eigentümer — ganz so, wie es 1931 in einem Gutachten, das seltsamerweise als Zerstörungen Warschaus überstehen sollte, der Basler Hans Bernoulli vorgeschlagen hatte: «Der Stadt ihr Boden, dem Bürger sein Haus». Als der Schweizer Architekt dann im Februar 1947 als Berater Warschaus dort ankam, wurde er als «der Vater des Warschauer Wiederaufbaugesetzes» gefeiert.

* * *

Ewig und unzerstörbar ist Mutter Erde. Der Boden soll nicht einem Einzelnen gehören, wohl aber die darauf stehenden Baute, denn diese sind Menschenwerk und werden wieder zu Staub zu fallen. Private Initiative bebaue den Boden, der in Baurecht für eine bestimmte Zeitspanne — 50, 80, 100 Jahre — verpachtet wird. Nach Ablauf dieser Frist wird der Boden für die Stadt wieder frei verfügbar, sie kann dann alte Quartiere einheitlich sanieren.

Nach manchen Städten wurde Hans Bernoulli geladen, um die

Haus dem Bürger!



meist in Trümmern. Nicht nur idelle Erwägungen sprachen für den Wiederaufbau an der gleichen Stelle, sondern auch technische: unter den Schutbergen zog sich ein kostbares Leitungsnetz für Wasser, Gas, Elektrizität, Telephon, Abwässer hin. Das kann weiter benutzt

werden, selbst wenn die Hauptstraßen wesentlich verbreitert und, wie in Warschau, Grünflächen in einer Breite von etwa 200 m einzelne Stadtteile voneinander trennen werden. — Das Bild zeigt eine der zerstörten Hauptstraßen von Warschau.

für den Wiederaufbau zerstörter Städte

Ideen zu entwickeln: in Prag sprach er vor der Masaryk-Akademie, in Wien als Gast der Stadt, in Budapest vom Staatssekretariat und dem Ministerium geladen, in Stuttgart in der Technischen Hochschule. Nach Frankfurt, Köln, Düsseldorf, nach Hannover, Braunschweig, Hamburg wurde Bernoulli meist von den Stadtverwaltungen zu Vorträgen über die Kommunalisierung des Bodens gebeten, oder über die Anwendung des Baurechtes im Wiederaufbau. Und das Land Baden legte im Entwurf zu einer «Lex Bernoulli» die Gedanken fest,

die schon in Warschau verwirklicht wurden und nach denen vor allem Freiburg i. Breisgau unter Bernoullis Mitwirkung wieder aufgebaut werden soll. Der Prophet, der in seinem Lande so wenig gilt, daß Bundesrat Etter es vor Jahren wagen durfte, dem unbequemen, eigenwilligen Denker und Politiker Bernoulli die Professur an der E.T.H. zu entziehen, wird im Auslande gehört, und sein Rat von Polen und der Tschechoslowakei, von Ungarn, Oesterreich und Deutschland gesucht. H.

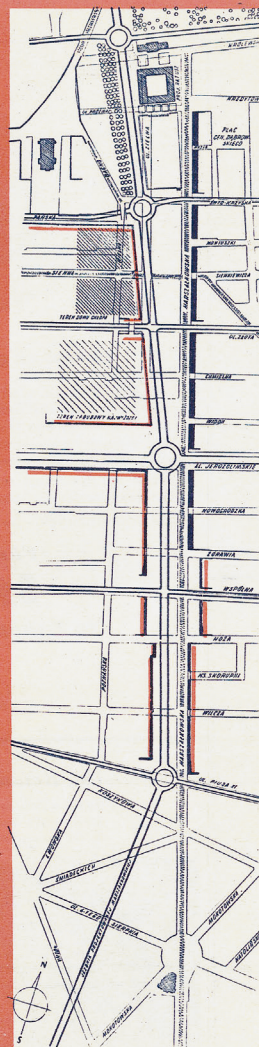


Besser eine geflickte Hose als gar keine

Wie soll man von Bomben wahllos zersetzte Städte, wie beispielsweise Stuttgart, erneuern? Soll man die Löcher flicken und die Lücken durch Neubauten auffüllen? Damit würde der Zustand von gestern verewigt; denn wenn neue Häuser in einen Block von 80-jährigen Bauten gestellt werden, wird der kommenden Generation es in 30 oder 40 Jahren unmöglich gemacht, das ganze Quartier abzureißen und zu sanieren. Bernoullis Vorschlag: solche Löcher nur mit Bauten zu flicken,

Professor Hans Bernoulli, der kürzlich in den Nationalrat gewählt wurde und seiner freiwirtschaftlichen Ideen wegen eine umstrittene Persönlichkeit ist.

die in 40 Jahren amortisiert werden können, wie Läden, Garagen, Schuppen, damit es sich dann lohnt, das ganze Viertel zu sanieren. Die Stadt ist dann für den Augenblick geflickt, aber es ist besser, eine geflickte als keine Hose zu tragen.



- Öffentliche Gebäude
- Terrain für Hochbauten
- Terrain für Grünzonen
- Projektierte Baulinien
- Begrenzungslinie d. öffentl. Straßen
- Fahrbahn der Straße
- Projektiertes Trottoir
- Bestehende Straße

Die roten Konturen zeigen die neuen Baulinien. Nur noch wenige Nebenstraßen werden hier einmünden und den Verkehr und Marktbetrieb wenig stören.

1 300 000 Einwohner lebten vor dem Kriege in Polens Hauptstadt, bei Kriegsende mögen es noch 130 000 gewesen sein. Nach dem Aufbauplan der Stadtverwaltung dürften 1965 wieder 900 000 Personen in Warschau ansässig sein. — Die Hauptstraße, die Marszałkowskastraße, dürfte durch Beseitigung der sie heute noch säumenden Trümmer etwa 100 m breit werden. Damit wird Raum für Marktstände, Parkplätze für Autos und Rollwagen gewonnen.

3 Hans Hofmann, "Aus Schrott wird Eisen und Stahl" (Scrap is turned into iron and steel); text panel for the wartime-economy exhibition at the Mustermesse Basel, 1943; Bequest of Hans Hofmann, gta Archives, ETH Zurich.

In his early years, Hans Hofmann had been a proponent of the Neues Bauen in Switzerland. As chief architect of the Swiss National Exhibition of 1939 he successfully added a regionalist-rustic touch to Swiss modernism. The wartime-economy exhibition held in 1943 during the Mustermesse (sample fair) Basel was aimed at embedding the Swiss-manufactured products shown at the fair into the narrative of the *Geistige Landesverteidigung* (Spiritual National Defense).





4 Werkbund Housing Estate Weißenhof, Stuttgart, 1927; photographs by Alfred Roth, 1935 and 1946; Bequest of Alfred Roth, gta Archives, ETH Zurich.


The young Alfred Roth had served as the architect in charge of the construction of the two apartment buildings in the Weißenhof Housing Estate designed by Le Corbusier and Pierre Jeanneret in 1927. Visiting Stuttgart in 1935, Roth photographed Ludwig Mies van der Rohe's apartment block, now adorned with a swastika flag. He returned shortly after the Second World War, only to find Walter Gropius's steel-frame model house bombed-out.



5 Clippings of military equipment from a pictorial encyclopedia, c.1934; CIAM Archives, gta Archives, ETH Zurich.

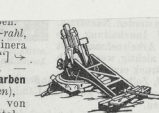
The compilation represents part of the preliminary work for the "Historical Chart of Urbanism," assembled by Rudolf Steiger, Wilhelm Hess, and Georg Schmidt following the fourth CIAM in 1933. The aim was to trace the evolution of the city since the Stone Age in relation to the respective modes of production, forms of mobility, and political organization, including changing military technologies.

Bastei, Bastion [it.], Festungswerk, das aus d. Umwallung vorspringt.
Bastia, Hafenst. im nördlichen Korsika, (1931): 44 628 E.
Bastian, Adolf (1826 bis 1905), Begr. d. neueren Völkerkunde. **Indonesien**.
Bastiat [-at], Frédéric (1801–50), frz. Nationalökonom, „Wirtschaftsoptimist“; Freihändler, Bekämpfer der Sozialisten.
Bastillo, frz. [-ij], swv. Schloß mit Wehrtürmen; Name d. ehem. Burg zu Paris, unter Ludwig XIV. Staatsgefängnis; Symbol der Tyrannei, 14.7.1789 vom Volke gestürmt (frz. Nationalfeiertag).
aus frz. Bastille auf Befehl



Bastion

Mineral [franz.], v. lat. *minera* „Erzgrube“ → Mineralien.
Mineral-farben (Erdfarben), Salze von Schwermetallen: Bleiweiß, Zinnweiß, etc.



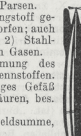
Mine

Maschinengewehr, Abk.: M.G., wichtigste Schnellfeuerwaffe d. Infanterie; d. Rückstoß wird zum Auswerfen der abge-schossenen Patronenhilse, zum Einschleiben ein-neuer Patrone in den Lauf, zum Spannen des Schusses benutzt.
Kühlwasser, Wasser, das die Maschine kühlt.
Patrone, Patronen-gurt, Patronenband.



Maschinengewehr

des Schweigens“. Begräbnisort d. Parsen.
Bombe, 1) Metallkörper, mit Sprengstoff gefüllt, v. Flugzeugen im Kriege abgeworfen; auch → Brandbombe (→ Luftschut); 2) Stahl-flasche z. Transport v. verflüssigten Gasen.
Bomben-Kalorimeter zur Bestimmung des Heizwertes v. festen od. flüssigen Brennstoffen.
Bombhose, frz. [-ous], dreihäufiges Gefäß zum Auffangen u. Verdichten v. Säuren, bes. von Salzsäure.
Bon [frz.], Gutschein auf eine Geldsumme, Waren od. Wertpapiere.
Bona, frz. *Bône*, frz. Festung u. bester Hafen in Algerien, (1931): 51 895 E; Aug. 1914 von dtsch. Kreuzern beschossen.
Bona fides [lat. „guter Glaube“] ist oft für eine Rechtsanforderung maßgebend, zB bei Eigen-Bombe
173 7 Konv.-Lexikon



Bombe

Brandbombe, Mülbinde mit Wismutpulver.
Brandbombe, meist aus den brennbaren Metall-Elektron beste-hende Bombe mit Fül-lungen von → Thermit, Ölen od. Phosphor usw.
Brandenburg, preuß. Prov., 39 028 qkm, 1933: 2 747 500 E; Land-schaften: Prignitz, Ucker, Neu-, Mittel-, Niederlausitz.



Brandbombe, Querschnitt

Panzer-Geschoß, starkwandiges, auch Vollgeschöß der Artillerie aus zähem Stahl mit gehärteter Spitze von höchster Durchschlagskraft, oft mit Verzögerungs-ründer. — **P.-kruziger**, gepanzertes Kriegsschiff von hoher Geschwindigkeit, starker Bestückung u. großem Aktionsradius. — **P.-platte** aus hochwertigem Chrom-nickelstahl, oft mit gehärteter Oberfläche für Kriegsschiffe; auch als Schutzschilde an Feldgeschützen usw. — **P.-schild** der Polizei → Abb. Schildformen. — **P.-turm**, drehbarer, auch versenkbarer Turm aus Panzerplatten. — **P.-wagen**, durch → Pan-zerplatten geschützter Kraftwagen, meist mit → Panzerturm mit Maschinengewehren, auch Schnellfeuer-geschütz.
Panzerwagen



Panzerwagen

Morgenstern, 1) → Abendstern (Venus); 2) mittel-alt. Handwaffe, Keule mit Stachelspitzen besetzt.
Morgenstern, 1) Christian (1871–1914), Dichter, Grotesk.



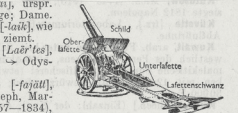
Morgenstern

Mörser, 1) Gefäß zum Zerstampfen harter Stoffe; 2) schweres Stoll-feuergeschütz z. Bekämpfen stark be-festigter Punkte (Festungsforts usw.).
Mortadella, in Ital. haltbare Zer-velatwurst; in Dtschld. Brühwurst. Schweine- u. Kalbfleisch m. Speckstücken.



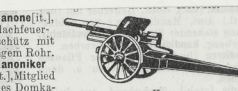
Mörser

Lauf [engl.], urspr. Dmcl. Adlige; Dame. — **L.-like** [-like], wie es einer L. ziemt.
Laertes [lat.], Vater des → Oly-sseus.
Lafayette [-fajet], Marie Joseph, Marquis de (1757–1834), erwarb s. Ruhm im nordamerik. Freiheitskrieg. Führer der Nationalgarde 1789, Gegner Na-poleons; 1830 wieder Führer der Nationalgarde.
Lalette [frz.], Gestell an der Kanone, trägt das Ge-schützrohr. Das untere Ende ist der **Lalettenschwanz**.



Lalette

Kanone [it.], Fluchfeuer-geschütz mit langem Rohr.
Kanoniker [lat.], Mitglied eines Domka-pitels.



Kanone

Scheitel, Fe-derbusch, Kopfkragen.
Haubitze, Feldgeschütz, zwischen Ka-none u. Mör-ser, f. Steil-u. Flachfeuer.



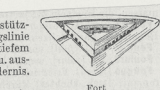
Leichte Feld-Haubitze

Gewinne, altgriech. Einteilung der Feldflur des Dorfes in viereckige Schläge.
Gewebe, 1) die den höheren tierischen u. pflanzl. Organismus zusammensetzenden Zellverbände; 2) → Weberei.
Gewehr, Handfeuerwaffe, mit gezogenem Lauf; auch mit Patronenmagazin. **Seiten-G.** (auch Bajonett), auf d. Gewehr aufpflanzbare dolchartige Waffe.



Gewehr

Fort, frz. [fört], Hptstütz-punkt der Befestigungslinie einer Festung mit tiefem Graben, Betonpanzer u. aus-gedehntem Drahthindernis.
Fortbildungsschulen, Fortbildungsschulen.



Fort

Landsknechte, angeworb. Kriegsknechte des 15. u. 16. Jh., in Ketten, Fährlein u. Regimente eingeteilt.
Landskrona [-krona], schwed. Hafenst. im Län Malmö, am Öresund. (1932): 18 656 E; dtsch. Vizekonsulat.
Landsmal, Bez. für die neuorw. Schriftsprache; um 1850 v. *Ivar Aasen* geschaffen.
Landsmannschaften, Ur-sprung aller schlagenden, student. Farbenverbindun-gen; später d. Dtsch. Land-mannschaft im Coburger L. C. (Convent).
Landsstände → Ständewesen.



Landsknecht

Kreuzzüge, Versuche, Pa-lästina der europ. Chris-tenheit zu gewinnen. Von Kreuzungspredigern (Bern-hard von Clairvaux) auf-gerufen, sammelten sich die Heerschaaren u. nahmen das Kreuz als **Kreuzfahrer** od. **Kreuzritter**. (Abb. auch → Taf. Deutsche Geschichte).
1. Kreuzzug 1096–99, Grün-dung des Reichs Jeru-salem. 2. 1147–49, er-folgt. 3. 1189–92, Friedr. Barbarossa ertrinkt 1190. 4. 1202–04, Lat. Kaiser-tum in Konstantinopel. 5. 1228–29, Kaiser Friedr. II. erhält durch Vertrag Jerusa-lim (ab 1244 dauernd ver-loren). 6. u. 7. 1248 u. 70 unter Ludw. IX. von Frankreich erfolglos. Auch → Kinderkreuzzüge.



Kreuzritter

brennungskraftmaschinen. — **Gasmaske**, erstmalig im Weltkrieg benutzt, schützt durch verschiedene Ein-sätze, die die giftigen Gase binden. (Auch → Luftschut). — **Gasmesser**, Gasuhr, gibt Verbrauch an. **Wasser-G.** u. **Trocken-G.** (→ Abb.) Letzterer besteht aus 2 Meßpulen (a), in denen die durch den Gasdruck er-zugte Hin- u. Herbewegung zweier Ledermembranen (b) mittels Hebel (c) auf darüberliegende Schieber u. das Zählwerk übertragen wird. — **Gas-öle**, bei 300° aus Erdöl destilliert. Treib-öle für Dieselmotoren, zum Karbu-rieren von Wasser gas geben diesem leuchtende Flamme. — **Gasolin**, Gas-äther, leicht flüchtig, 170° aus Erdöl destilliert; Fleck- → großen zur




Gasmaske

Präsentieren, vorzlei- anbieten; z. Annahme einreichen, bes. Wohl-gei; **Gewehr p.**, dieses senkrecht mit beiden Händen vor Körper halten (als Ehrenbe-zeigung). — **Präsen-tiermarsch** von 1806 → Marsch, Überdicht.
Präsenz [lat.], Anwe-senheit. — **Präsenz-liste**, Liste der Anwe-senden.
Prasodym [prase-o-dym], seltene Erde.



Präsentieren

Kampffahrzeug; mit Maschinengewehr, Revolverkanonen od. leicht-ten Geschützen be-stückt; von großem Gefechts-wert; als → Raupen-fahrzeug jeder Geländeschwie-ri-keit gewachsen. In Frankr. u. Ver. St. v. A. neb. lang-sameren Infan-trie-verbänden für Auf-klärung u. Sonderangriffe, in Rußland Infanterie, Ferninfanterie u. Fernkampf-t.s. In Dtschld. durch Vers. Diktat verboten. Auftreten v. T. zuerst im Welt-krieg, bes. in den sog. **Tankschlachten** 1917 b. Cam-brai u. 1918 an der Aisne.



Tank

Dr Giedion

Here is the bombardier's seat in a B-17 Flying Fortress. Unfortunately the bomb sight is behind the man, but you must admit it is a good photograph of the chair!

Gutheim



6 U.S. Army Signal Corps, bombardier's seat in a B-17 Flying Fortress; photo, c.1940; Bequest of Sigfried Giedion, gta Archives, ETH Zurich.

In preparing his book *Mechanization Takes Command* (1948), Sigfried Giedion spent many years collecting information on chairs and loungers that could be adapted to a variety of postures and activities. The collected material would serve as the basis for a chapter on patent furniture. That a picture showing the moveable seat of a U.S. bomber pilot also caught his attention is not surprising.

7 General Electric Consumers Institute, *Wartime Laundry Demonstration*; advertising leaflet, c.1940; Bequest of Sigfried Giedion, gta Archives, ETH Zurich.

Advertising brochures for household appliances from the General Electric Corporation are also to be found among the research materials for Sigfried Giedion's *Mechanization Takes Command*. Published by the in-house Consumers Institute, the promotional booklets were meant to appeal to U.S. housewives; thus, emphasis was placed on practical everyday tips. Following U.S. entry into the Second World War in 1941, the female readership was also urgently reminded of its civic duties on the home front.

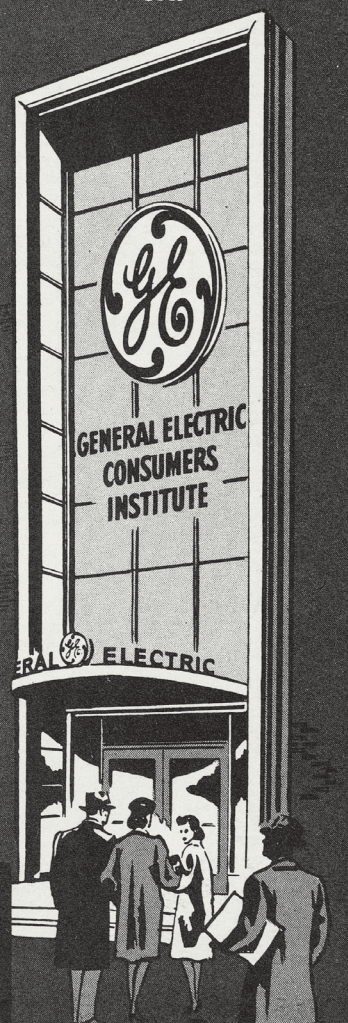
WARTIME LAUNDRY DEMONSTRATION



HERE'S your complete wartime laundry demonstration manual. It starts right out with ideas for your introductory speech. Following this, you take your audience through a typical laundry tackling the wartime problems just as they come up in the home. You may wish to mimeograph the charts for distribution.

GENERAL  ELECTRIC
CONSUMERS INSTITUTE - BRIDGEPORT, CONN.

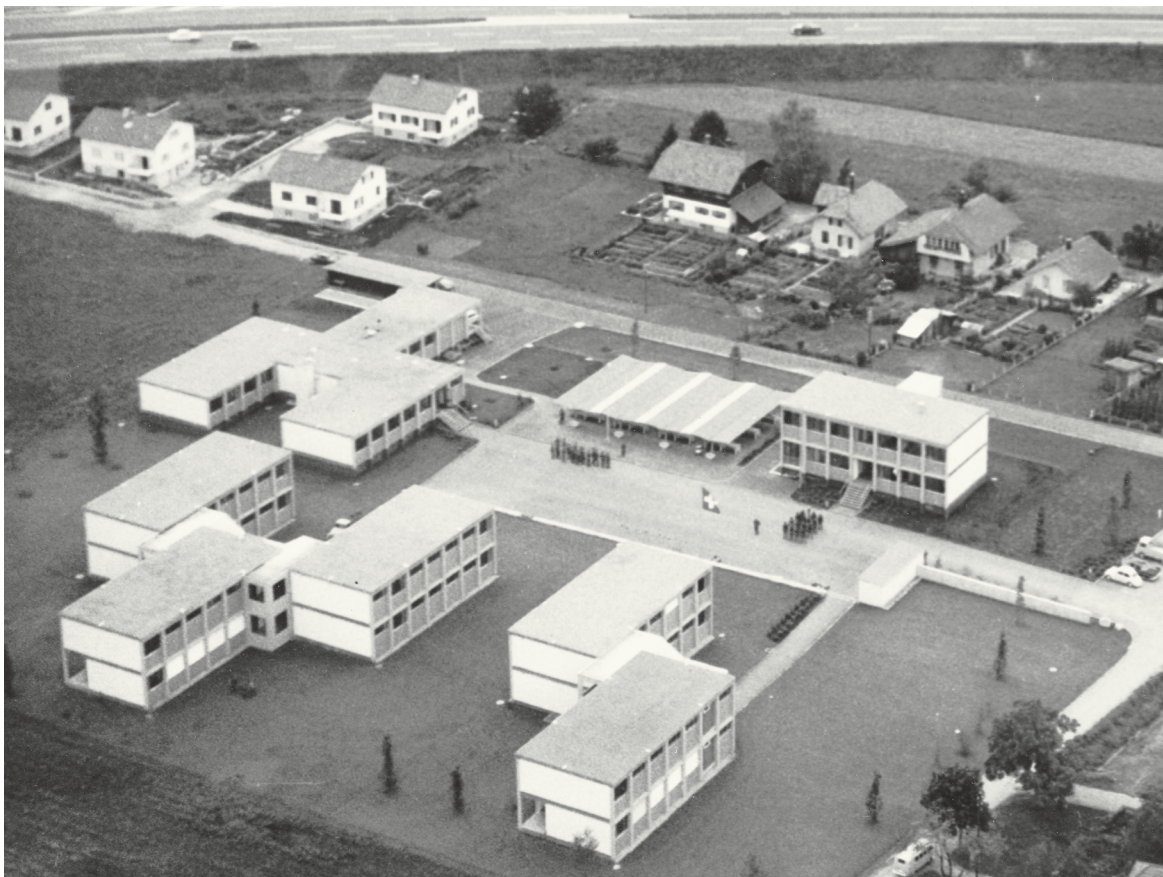
Nutrition
•
Food Preparation
•
Food Preservation
•
Consumer Consultation
•
Appliance Care
•
Appliance Repair
•
Laundering
•
Home Heating
•
Air Conditioning
etc.





8 Fritz Stucky, army post at the Sand military base, Urtenen-Schönbühl, Canton of Bern; photographs, 1966; Bequest of Fritz Stucky, gta Archives, ETH Zurich.

The units of the prefabricated Variel system developed by Fritz Stucky could be transported like containers and easily stacked to form multiple-story building complexes. The system could be used utilized for a variety of building assignments and was in fact used worldwide in hundreds of cases for schools, hospitals, administrative buildings, and housing complexes, as well as military facilities.



9 Title page of *Habitation 5–6* (1944); Bequest of Alfred Roth, gta Archives, ETH Zurich.

A competition was held among prisoners of war in 1944 in the hope of producing ideas for postwar reconstruction. The jury included Alfred Roth, who was repeatedly active on behalf of foreign architects interned in Switzerland during the Second World War. Toward the end of the war Roth, joined by a number of these architects, founded the Bureau Technique de la Reconstruction with branches in Zurich and Milan.



10 Ernesto N. Rogers,
letter to Alfred Roth,
August 16, 1944;
Bequest of Alfred Roth,
gta Archives, ETH Zurich.

Ernesto N. Rogers,
cofounder of the Milan
architectural firm BBPR,
fled from Italy's fascist
race laws to Switzerland
in 1939, where he
formed close contacts
with Alfred Roth and
Max Bill. His office
partners Gian Luigi
Banfi and Ludovico
Barbiano di Belgioioso
were arrested in 1944
for their participation
in the *Resistenza*. Banfi
died in the Gusen labor
camp shortly before the
liberation of Italy.

De l'Italie j'ai toujours des
nouvelles affeuses : ce qui me
plonge dans la plus profonde
inertie. Et même qu'ici je ne
puisse me plaindre à rien, je
sens un désarroi intime d'y être.

Ne m'oublie pas, mon très,
très cher Alfred, et accueille mes
salutations les plus affectueuses.

16. 8. 44.

Ernesto.

Mes élèves Chessa et Magistretti viennent
probablement à Zurich : ce sont deux garçons
très bien, qui ont une grande admiration pour
tes travaux et que je me permets de recommander
à ton amitié.

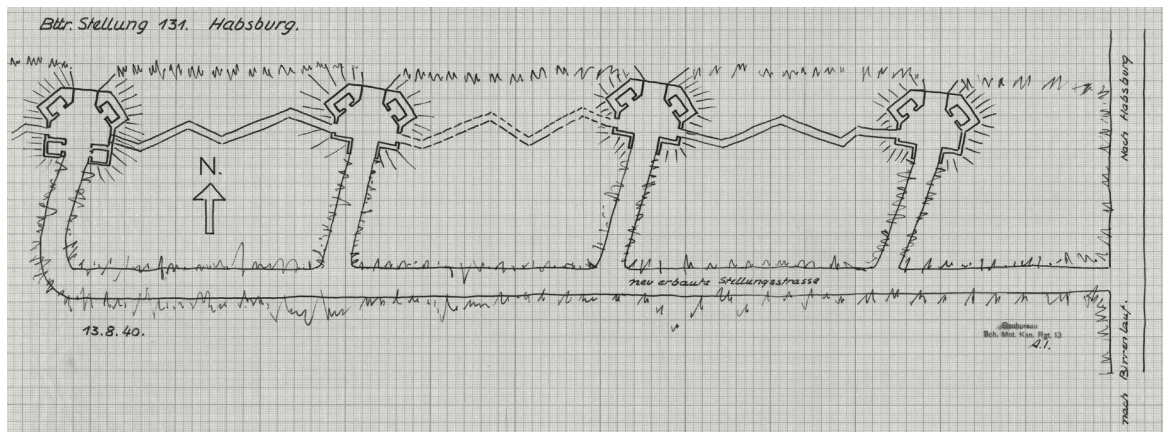
Tu peux m'écrire en adressant - sans autre indication
ainsi : M. F. ROLLIER chez DESSEMONTET
12, rue Cheneviers VEVEY —

11 Arnold Itten, underground cannon emplacement close to Habsburg; sketch, August 13, 1940; Bequest of Arnold Itten, gta Archives, ETH Zurich.

Arnold Itten was one of the early proponents of modern architecture in the Bernese Oberland. Among those hoping to acquire practical building experience in Itten's office was the young Dutch architect Mart Stam; he worked there from 1924 to 1925. During his active military service in the Second World War, Itten was in charge of the construction office of an artillery regiment. His assignments at the time, including various designs for military facilities, are preserved in his bequest.

12 Heinz Isler, atomic-bomb shelter; photo, 1955; Bequest of Heinz Isler, gta Archives, ETH Zurich.

At the height of the Cold War, shell-construction pioneer Heinz Isler was commissioned by the Swiss army to develop an atomic-bomb shelter. The semispherical concrete shell covered with earth could be erected by a small number of soldiers in the space of a week without the aid of machinery. The strength of the construction was tested in field trials using blastings.



ETH
ZÜRICH

INSTITUT
FÜR GESCHICHTE UND THEORIE DER ARCHITEKTUR
ORGANISATIONSTELLE FÜR AUSSTELLUNGEN
DER ARCHITEKTURABTEILUNG



FESTUNGEN AN DER ATLANTIKKÜSTE

AUSSTELLUNG VOM 11.MAI BIS 1.JUNI 1978
ETH-HÖNGGERBERG HIL, ARCHITEKTURFOYER
ÖFFNUNGSZEITEN: WERKTAGS 08.00–20.00 UHR

13 Organizational
Office for Exhibitions of
ETH Zurich's Depart-
ment of Architecture,
Bunkerarchitektur
(Bunker architecture),
exhibition poster, 1978;
Archives of gta Exhibi-
tions, gta Archives, ETH
Zurich.

With his book *Bunker archéologie* and the eponymous exhibition in the Centre Pompidou, in 1975, Paul Virilio presented the results of his long-lasting explorations of the bunkers along the Atlantic Wall built during the Second World War. Whereas the primary concern of Virilio's examinations was to arrive at fundamental propositions about the nature of war and the specific logic of military spaces, the exhibition held at ETH three years later primarily celebrated the aesthetic fascination of the subject.

14 Armin Meili,
Allmend infantry
barracks in Lucerne,
1934–1935; photograph
by Sigfried Giedion;
Bequest of Sigfried
Giedion, gta Archives,
ETH Zurich.

The infantry barracks
in Lucerne, executed
in exposed concrete,
is one of the major
projects of the architect
Armin Meili. As the
director of the Swiss
National Exhibition
of 1939 and later also
as a politician and
high-ranking military
officer (he had been
a colonel in the Swiss
General Staff during
the Second World War),
Meili had a significant
influence among
those shaping postwar
Switzerland.



Verfügung Nr. 6

des

Kriegs-Industrie- und -Arbeits-Amtes über die Normalisierung des Kantholzes.

(Vom 1. Oktober 1943.)

Das Kriegs-Industrie- und -Arbeits-Amt,
gestützt auf die Verfügung Nr. 26 des eidgenössischen Volkswirtschaftsdepartementes vom 2. April 1941 über die Sicherstellung der Versorgung von Volk und Heer mit technischen Rohstoffen, Halb- und Fertigfabrikaten (Produktion, Verteilung und Verwendung von Holz und Holzkohle),

verfügt:

Art. 1.

Kanthölzer (Balken) aus Nadelholz dürfen ab 1. November 1943 innerhalb der Dimensionen 6/6—24/28 nur noch auf folgende Abmessungen eingeschnitten werden:

6/6									
6/8	8/8								
6/10	8/10	10/10							
6/12	8/12	10/12	12/12						
6/14	8/14	10/14	12/14	14/14					
6/16	8/16	10/16	12/16	14/16	16/16				
6/18	8/18	10/18	12/18	14/18	16/18	18/18			
6/20	8/20	10/20	12/20	14/20	16/20	18/20	20/20		
	8/22	10/22	12/22	14/22	16/22	18/22	20/22	22/22	
	8/24	10/24	12/24	14/24	16/24	18/24	20/24	22/24	24/24
		10/26	12/26	14/26	16/26	18/26	20/26	22/26	24/26
		10/28	12/28	14/28	16/28	18/28	20/28	22/28	24/28

Die Sektion für Holz kann auf begründetes Gesuch hin den Einschnitt von Kanthölzern anderer Abmessungen bewilligen. An die Erteilung der Bewilligung können Bedingungen geknüpft werden.

1943 — 501

15 Swiss Office for War Industries and Labor, rationing and normalization of squared timber, directive of October 1, 1943; Bequest of Jakob Zweifel, gta Archives, ETH Zurich.

The tasks of the Swiss Work Group on Wood, founded in 1931 under the name Lignum, included promoting the industrial manufacture of wooden building components. As a result, wood as a domestic resource became increasingly popular as a modern building material. After 1939, the federation supported state regulatory programs and sent out official directives as a supplement to its publication *Holz in Technik und Wirtschaft* (Wood in technics and in the economy). The wood industry evidently hoped to profit from the war-related shortage of other construction materials.

16 Aldo Rossi, Monumento ai Partigiani, Piazza del Municipio, Segrate, 1965–1967; photographs by Heinrich Helfenstein; Bequest of Heinrich Helfenstein, gta Archives, ETH Zurich.

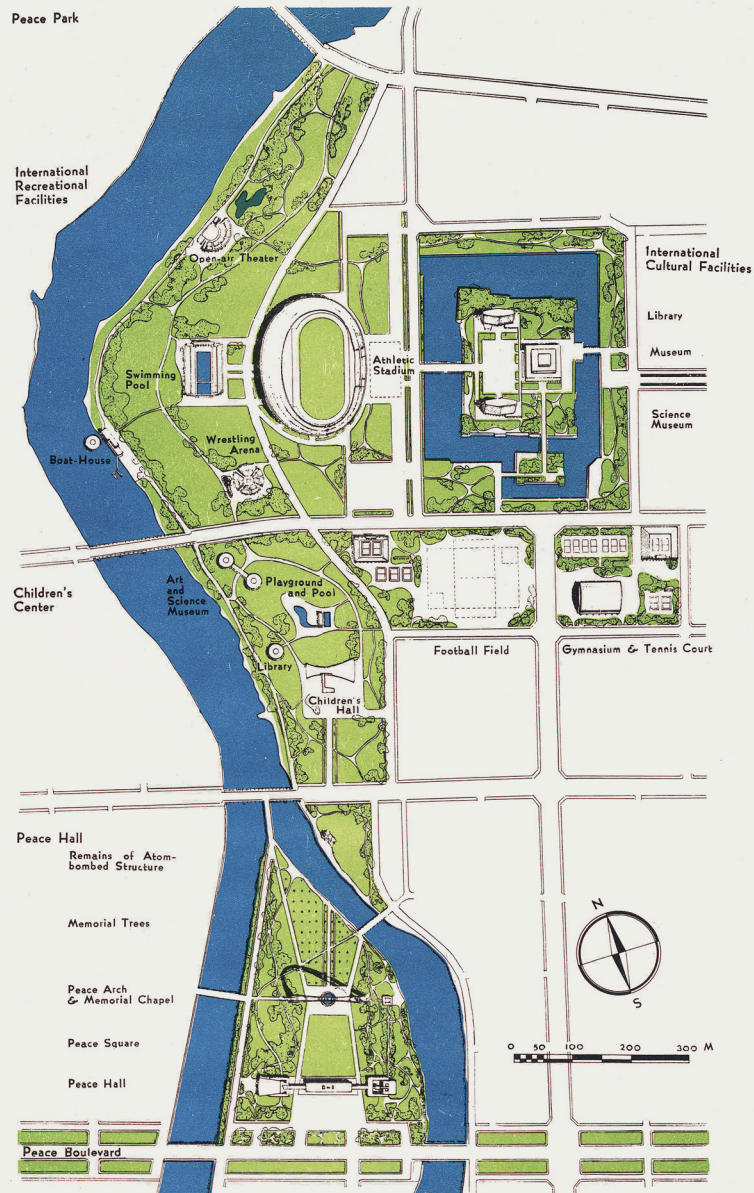
Rossi's monument honoring the Italian anti-fascist resistance is one of the outstanding testimonials to a younger generation's attempts at meeting the challenges represented by the legacies of the Second World War in Italy. The photographs were taken by Heinrich Helfenstein, who served as Rossi's assistant in the 1970s and translated his lectures at ETH into German. Helfenstein's pictures belong to the canonical images of Rossi's architecture.



CENTRAL THEME OF HIROSHIMA CITY PLANNING

PEACE PARK PROJECT

Designed by:
Kenzo Tange, Takashi Asada, Sachio Otani
and their associates of the Planning Research
Group, Architectural Department, Tokyo Uni-
versity.



Our city planning is a planning for construction of a peace city as the symbol of the human ideal for eternal peace as well as a planning for reconstruction of human Life. Therefore we have launched a program of constructing peace facilities, as the central theme of city planning, and also housing, working, recreation and transportation facilities. Hiroshima which had a population of 136,000 at the close of war had increased its population to 270,000 (as of Dec. 1949). The problem of housing shortage is still acute. Although numerous temporary homes have been erected, these are far from meeting actual needs. However, construction of ferro-concrete apartmenthouses, though of a crude nature, has gotten underway in recent months, bringing new light and hope into the lives of many.

Despite all hardships, we of Hiroshima are daily becoming more resolute in our conviction that peace is not only desirable but imperative, and in our determination to establish a peace city symbolic of the human ideal for eternal peace.

Hiroshima no longer belongs to the people of Hiroshima or Japan alone. It belongs to the whole human society. This is the spirit which lies at the core of Hiroshima's city planning. The central theme of Hiroshima city planning program, therefore, lies in the ultimate creation of a city whose facilities would be of real service to mankind in its pursuit of peace and happiness. The following is a brief description of the important peace projects contemplated by the City of Hiroshima.

17 Kenzo Tange, Peace Park Project, Hiroshima; page from the brochure *Peace City Hiroshima*, c.1950; CIAM Archives, gta Archives, ETH Zurich.

Many among the CIAM documents preserved by the urban-planning theorist Jacqueline Tyrwhitt are related to the reconstruction of Hiroshima. The Peace Park, codesigned by Kenzo Tange, was intended to give the city a new center and to serve as a landmark for world peace. The project was presented at the eighth CIAM as an example of a civic center and subsequently published by Tyrwhitt in *The Heart of the City* in 1952.

Calculating the Apocalypse: The Unexpected Career of the Swiss Nuclear Bunker

Silvia Berger Ziauddin

Silvia Berger Ziauddin is Assistant Professor of History at the University of Bern.

Note: Parts of this article were published in Silvia Berger Ziauddin, "Superpower Underground: Switzerland's Rise to Global Bunker Expertise in the Atomic Age," *Technology and Culture* 58, no. 4 (2017): 921–54. © Society for the History of Technology. Reprinted with permission of John Hopkins University Press.

1 Bundesamt für Bevölkerungsschutz, ed., *Jubiläumsbuch 50 Jahre Schutz und Hilfe* (Bern: Bundesamt für Bevölkerungsschutz, 2013), 71.

2 Peter Amstutz, "Wie Marmelade ab in den Schutzraum," *CD Sicherheits-Management* 32, no. 3 (2008): 13–15, here 15.

3 Sophie Schimansky, "Bunker-Boom: Das Geschäft mit der Angst," *NZZ am Sonntag*, September 24, 2017.

4 On the legal and institutional evolution of the Swiss system of civil defense outlined in this paragraph, see Yves Maik Meier and Martin Meier, "Zivilschutz: Ein Grundpfeiler der Schweizer Landesverteidigung im Diskurs," *Schweizerische Zeitschrift für Geschichte* 60, no. 2 (2010): 212–36.

Imagine a nation with security cells in every home. Five decades ago, this vision materialized in Switzerland. At the height of Cold War saber rattling in the early 1960s, a federal construction law obliged the Swiss authorities to build 360,000 private nuclear shelters, the majority of them in the basements of family homes. ¹ To this day, 12 billion U.S. dollars have been invested in constructing highly standardized nuclear shelters for the population. By 2006, the protection ratio reached 114 percent, meaning Switzerland currently has more protective spaces than inhabitants. ² The survival infrastructure in the private sphere not only left massive scars in the country's soil, however; nuclear bunkers made in Switzerland have had a global impact. Since the 1970s, design codes and bunker technology from the alpine republic have represented a global benchmark from the United States to Saudi Arabia. And Swiss shelter know-how is still in demand. The ever-growing "survivalist" movement, for example, heavily relies on Swiss ventilation technology when equipping doomsday shelters. ³ How did a country that defined itself as neutral and never took center stage in the Cold War's recurrent international crises become a hub for bunker design and technology? How was the expertise in the alleged "periphery" accumulated? And how did it materialize into concrete and generate such international momentum?

The Emergence of Swiss Vertical Defense

There have been few peacetime eras in which the specter of war was so vividly present in so many people's minds as the 1950s and early 1960s. In Switzerland, four "hot" phases significantly exacerbated the feeling of being under threat and proved to be catalytic for the emergence of the Swiss system of civil defense: the Korean War of 1950 to 1953, the Suez and Hungarian crises of 1956, and the Berlin and Cuban crises of 1961 and 1962 respectively. ⁴ During the Korean crisis, military air-raid protection corps were established in support of the population, and the Federal Council required property owners to install air-raid shelters in new buildings to protect against shrapnel and debris. Referenda held after the dual crises of 1956 put civil defense and the right to civil protection on a constitutional basis and assigned responsibility for both to the civil authorities. The construction of the Berlin Wall and the Cuban Missile Crisis in turn forged the legislative anchors of civil defense. The Swiss parliament in 1962 voted in favor of the first phase of the new civil defense legislation, covering the

organizational and service requirements for civil defense. In 1963, it passed the Federal Shelter Construction Law, which foresaw the installation of modern nuclear shelters for all new buildings in communes with over 1,000 inhabitants. In 1971, this provision was extended to all municipalities. Each inhabitant of Switzerland, including registered refugees and immigrant laborers, would receive a protective space to which the public sector contributed at least 70 percent of the cost. ⁵

Switzerland's endeavor to roll out a blanket system of vertical defense is properly understood only if considered against the country's guiding principles. Particularly pertinent is a concept propagated since the early 1950s by the government and the military alike; namely, that a "total war" necessitates a "total national defense." ⁶ Consequently, not only military but also civil forms of defense were enormously expanded. Another motive for the defensive efforts was the belief that Switzerland was a "special case." This mindset, particular to national security officials, had been reinforced by the belief that the Swiss had survived the vicissitudes of the Second World War unscathed thanks to their own determination and strong deterrents—the latter symbolized by the Swiss militia army, which was based in a highly fortified alpine bastion, the so-called "redoubt." ⁷ The shared memory of being spared from an attack by Nazi Germany and mythologies flourishing around the redoubt fostered strong support for civil defense. In addition, values perceived as "Swiss" that strengthened the politico-cultural movement of "spiritual national defense" played a decisive role: love of freedom, independence, neutrality, military readiness, and the rejection of everything foreign. This "cultural fortification system" served to encourage a "hedgehog" mentality and legitimized both cultural and political isolationism. ⁸ Switzerland morphed into an inwardly highly-integrated defense community, which also left a strong legacy for civil protection. The fully self-sufficient "hedgehog" should be formed up again to dissuade potential attackers. ⁹ Bunkers not only fit perfectly into this picture of a fortified country whose citizens would never submit to subjugation. Advocates of the idea also embraced the redoubt myth by promoting private shelters as "citizen redoubts" that replicated the alpine military fortress. ¹⁰ Furthermore, the idea of a "survival island" for the middle-class family, that "primary cell of democratic society," resonated well with the notion that Switzerland was a chosen model republic, apt to survive as an isle of the blessed in a sea of destruction and death. ¹¹

⁵ Bundesamt für Zivilschutz, *Zivilschutz Konzeption 1971* (Bern: Bundesamt für Zivilschutz, 1978); "Bundesgesetz über die baulichen Massnahmen im Zivilschutz," *Zivilschutz* 10, no. 6 (1963): 127–29, here 128.

⁶ Bernhard Degen, "Die totale Verteidigungsgesellschaft," in *Krieg*, eds. Christoph Maeder, Ueli Mäder, and Sarah Schillinger (Zurich: Seismo, 2009), 89–105.

⁷ On the genealogy of the idea of a fortified "redoubt" in the Alps, see Rudolf Fuhrer and Marc Hamel, *Réduit I: Militärgeschichte zum Anfassen* (Zurich: Au, 2007).

⁸ Jakob Tanner, "Die Schweiz in den 1950er Jahren: Prozesse, Brüche, Widersprüche, Ungleichzeitigkeiten," in *achtung: die 50er Jahre! Annäherungen an eine widersprüchliche Zeit*, eds. Jean-Daniel Blanc and Christine Luchsinger (Zurich: Chronos, 1994), 19–50, here 44.

⁹ Degen, "Verteidigungsgesellschaft" (see note 6), 100.

¹⁰ "Reduit des Bürgers," *Profar* 18, no. 7/8 (1952): 9; Heierli, "Der Schutzraum als Überlebensinsel," *Schutz+Wehr* 34, no. 9/10 (1968): 120–22; "Praktischer Familienschutz," *Profar* 18, no. 7/8 (1952): 87; Thomas Maissen, "Auserwähltes Volk – Unter den Boden," in *Im Untergrund*, eds. Sylvia Ruettimann and Monika Hardmeier (Nuremberg: Verlag für moderne Kultur, 2007), 81–86, here 84.

¹² Daniel Marek, "Die Landnahme im Untergrund," in *Im Untergrund*, eds. Ruettimann and Hardmeier (see note 11), 75–80.

¹³ Schweizerischer Bund für Zivilschutz, *Wir können uns schützen*, civil defense movie, 1963.

¹⁴ Ernst Basler, epilogue to *Schild aus Stein und Eisen*, ed. René Bondt (Stäfa, Switzerland: Th. Gut and Co., 1978), 229–34, here 230.

¹⁵ Fritz Sager, "Die Bedeutung der Zivilschutzkonzeption 1971," *Schweizer Baublatt*, April 1972, 4–14, here 4.

¹⁶ Swiss Federal Archives (SFA), 4390C, 1977/164, vol. 48, Ordinance regarding the working group on structural civil defense, December 28, 1962.

Ever since the Swiss had started to build elaborated tunnels through the Alps in the second half of the nineteenth century in order to advance transport and trade, the vertical axis represented the inherently Swiss axis of colonization.¹² Thanks to this conquest of the underground, as well as the subsequent rereading both of the underworld and of mountain ranges as protective zones, there was little expectation that the public might balk at the idea of retreating below ground. By choosing the alpine marmot as the mascot of Swiss civil defense, the authorities made the most of these associations of subterranean spaces. In Swiss civil defense propaganda, marmots warned of air raids by emitting a whistle, whereupon all animals were to retreat nimbly to their underground caves.¹³

Accumulating Knowledge

"Nuclear war is doable" — this was the slogan the Swiss authorities propagated in the early 1960s. In the eyes of the Federal Council, modern shelters would considerably enhance the population's chances of survival, despite the devastating potential of nuclear weapons. The actual construction of nuclear shelters was still on shaky ground, however, in part because Swiss engineers and architects were reluctant to engage with the modern threat, but also because Switzerland, a nonmember of the North Atlantic Treaty Organization, had limited knowledge of the complex effects of nuclear weapons.¹⁴ When thermonuclear scenarios started to proliferate in the mid-1950s, Swiss air defense officials realized how little use the air-raid shelters built thus far (approximately 65,000) would be in the event of a nuclear attack. The existing shelters had been geared to a conventional war: the walls were designed to withstand falling rubble, doors were made of wood, and the need for ventilation systems was not foreseen.¹⁵ Any claims to real expertise in bunker design for the atomic age would have been far-fetched at this stage. At the start of the 1960s, with new shelter construction legislation in the pipeline, Switzerland had to launch itself on a frenzy of nuclear learning.

In 1962, a Working Group for Structural Planning for Civil Defense was set up at the Federal Office for Civil Protection (FOCP), a ten-member advisory board comprising physicists, engineers, architects, chemists, and civil defense officials.¹⁶ Yet how was this group of self-confessed "beginners" supposed to acquire data on the effects of nuclear weapons, including the latest and most powerful one, the hydrogen bomb? On this steep nuclear learning curve, Samuel Glasstone's book *The Effects of Nuclear Weapons* proved to be a vital first step. The U.S. Atomic

Energy Commission had published the book in 1957, subsequent to a policy shift in the mid-1950s: the U.S. government had revoked the “top secret” classification of knowledge pertaining to the effects of nuclear weapons, thus signaling its intent to facilitate other countries’ defense strategies by allowing them monitored access to the relevant data. ¹⁷ Glasstone’s work can be regarded as a simplified condensate of a varied spectrum of local actor-worlds, comprising human and nonhuman actants such as test sites in Nevada, atomic bombs, measuring tools and practices, animals, buildings, scientists, and inscriptions devices. By means of statistics, illustrations, and graphs, *The Effects of Nuclear Weapons* delivered from the American desert to Switzerland data on phenomena such as pressure waves, thermal radiation, and radioactive fallout and their effects on human beings, materials, and structures.

¹⁷ Samuel Glasstone, *The Effects of Nuclear Weapons*, prepared by the United States Department of Defense, published by the United States Atomic Energy Commission (Washington, D.C.: U.S. Government Printing Office, 1957).

Knowledge transfer, however, depended on more than just textbooks crossing the Atlantic. From 1963 until circa 1970, increasing numbers of people boarded airplanes, made contacts in the United States, visited research labs, acquired reports and data, took notes on test sites, returned to Switzerland, dispatched letters to the United States, received answers, and welcomed American atomic physicists, engineers, and civil defense officials in Switzerland. The starting point for this process of knowledge accumulation was a symposium organized by the Working Group on Structural Civil Defense at the Federal Institute of Technology (ETH) Zurich in 1963. Glasstone may have provided data on nuclear weapons, but his book contained no concrete guidelines on effective dimensions for shelter structures. Time was running short, for in 1962 the Federal Council had announced forthcoming legislation on structural civil defense. To facilitate the development of the requisite building codes, the Swiss decided to pool all the data they had acquired on nuclear weapons effects and to invite all known structural defense specialists to Switzerland. Appointing German ballistics expert Hubert Schardin to act as conference director proved to be a decisive move—he had an excellent network of European and American contacts. ¹⁸ The efforts paid off. In the summer of 1963, more or less all of the Western world’s combined know-how on the effects of nuclear weapons and passive defense systems rolled into Zurich, including Harold Brode, a physicist and weapons impact specialist on the RAND Corporation payroll; Nate Newmark, the central figure in refining understanding of structural response to atomic blast effects, from the University of Illinois; and world-renowned civil engineer John Biggs of the Massachusetts Institute of Technology (MIT). ¹⁹

¹⁸ Hubert Schardin was director both of the German-French Research Institute of Saint-Louis and the Ernst-Mach-Institute (EMI) in Freiburg, eminent institutions for protective structures and shock-wave research in Europe at that time.

¹⁹ Bundesamt für Zivilschutz, *Symposium über wissenschaftliche Grundlagen des Schutzbaues an der Eidgenössischen Technischen Hochschule Zürich*, July 25–30, 1963, Symposium report (Bern: Bundesamt für Zivilschutz, 1963).

Despite the phalanx of experts, the outcome of the conference was ultimately modest. Owing to the number of factors to be considered—from dynamic and static pressure to impulse and reflection, from supersonic and subseismic waves to Rayleigh waves, from fusion and fission bombs to primary and secondary radiation—not one of the participants was able to provide a complete assessment of shelter criteria. Yet the symposium was beneficial in the medium term. It put the issue in the public eye, established the bunker as a legitimate study object of Swiss civil engineering, and, most important, laid the groundwork for further contacts with the United States. ²⁰

²⁰ See Ernst Basler, *Erinnerungen* (Zollikoberg, Switzerland: Ernst Basler+Partner, 2010), 210.

Additional stimuli for such exchanges came from the Research Institute for Military Construction (FMB), a strong institutional hub founded at the Federal Institute of Technology in 1964. The director of the new institute, Lieutenant-Colonel Ernst Basler—a civil engineer who had graduated from ETH Zurich and completed his postgraduate studies at MIT—arranged stays at American research laboratories for his team, organized observations at experimental test stations, and invited American scientists and officials to FMB. ²¹ Close friendships even developed; for example, with Neal FitzSimons, who, as director of the Engineering Development Division, Office of Civil Defense, U.S. Department of Defense, led special projects studying ways to protect the president and key federal officials from military attack. ²²

²¹ SFA, FMB 5484, 1978/44, vol. 8, Foreign Contacts.

²² See "Neil FitzSimons, 71," *Washington Post*, April 1, 2000.

Local Calculations

The foreign data that piled up in Switzerland ultimately served to define building codes apt for immediate use. Basler was essential for the speedy production of this new entity of knowledge. He and his team at FMB defined most of the critical issues, created stable institutional settings, and led the epistemic groundwork for new conceptual frames and methodological repertoires. Given the time pressure and the limited number of expert staff, time-consuming and labor-intensive test-site experiments did not take center stage. The adopted solution instead was to synthesize all available data and draw up theoretical models with the aid of mathematical and quantitative methods and techniques, such as stochastics, statistical correlation, and cost-benefit analysis. Since the Second World War this repertoire had been applied to the thriving field of operations research. ²³ Basler and other Swiss engineers, such as Werner Heierli, ranked among its greatest advocates. In their opinion, there was no better way to address a highly complex engineering system like the nuclear shelter, or indeed any intricate system that required decisions be reached on the basis of incomplete and imprecise information.

²³ See Dominique Pestre and Amy Dahan, "Transferring Formal and Mathematical Tools from War Management to Political, Technological and Social Intervention (1940–1960)," in *Technological Concepts and Mathematical Tools in the Evolution of Modern Engineering Systems*, eds. Mario Lucertini, Ana Millian Gasca, and Fernando Nicolo (Basel: Birkhäuser, 2004), 79–192; Maurice W. Kirby, *Operational Research in War and Peace: The British Experience from the 1930s to 1970* (London: Imperial College Press, 2003).

Their approach was fueled by the dual premise formulated at the outset: protective measures should safeguard against all types of weapons effects, and they should be economically viable. Shelters were accordingly required to offer not total protection but the *optimal* protection possible proportional to the cost expenditure.

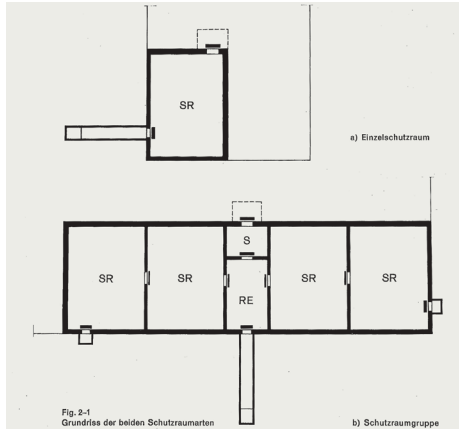
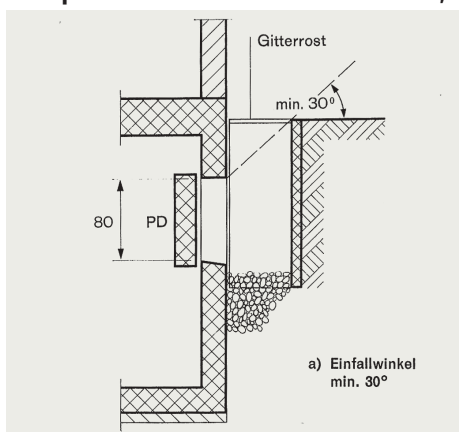


fig.1 Floor plan of a single shelter (SR) and a shelter group with four shelter cells, an airlock system (S), and cleaning room (RE).

24 Samuel Glasstone, *Die Wirkung der Kernwaffen* (Cologne: Heymanns, 1960), 491.

This aspiration to provide a uniform level of protection (i.e., against all weapons effects) yet to simultaneously tolerate the reality that protection would never be total had already been formulated by Glasstone.²⁴ However, had the Swiss been less eager to adopt the knowledge register and mathematical tools of optimization, Glasstone's ideas would not have left the drawing board. Likewise, had Switzerland not had the political will and finances, plus a cultural tradition apt to foster a bunker mentality, the concerted research on protective structures and the utter sense of vocation that drove the small group of people entrusted with shelter issues would never have transpired. As it was, the scientists, engineers, and civil defense officials involved were all persuaded of the absolute necessity of a defense in the vertical plane; all had an unwavering faith in the feasibility of planning and designing civil defense against even the most complex threats; and all had strong ties with the military and accordingly saw eye to eye on matters concerning the physical and ideological defense of their land.

The first outcome of the Swiss efforts to synthesize the available data was a handbook of weapons effects for the design of protective structures, published in 1964.²⁵ The compendium described the relative effects of the broadest possible range of weapons and calibers on buildings and people and came complete with graphs and diagrams for easier comparison. Subsequent studies centering on the optimal scope of protection were published in smaller reports and articles. As the value of protective constructions could not be assessed without an "objective"



25 Arbeitsgruppe für den baulichen Zivilschutz, *Handbuch der Waffenwirkungen für die Bemessung von Schutzbauten* (Bern: Bundesamt für Bevölkerungsschutz, 1964).

fig.2 Specification for the layout of the emergency exit.

rating scale, Basler coined a new concept, *Wirkungsgrad*, roughly translatable as "efficiency ratio." In an article published in the trade journal *Schweizerische Bauzeitung* in 1965, Basler presented the efficiency ratio in terms of probability calculations; namely, as the relation of the increase of the population's chances of

26 Ernst Basler and Ulrich Kämpfer, "Über den Wert von Schutzmassnahmen gegen nukleare Waffen," *Schweizerische Bauzeitung* 83, no. 28 (1965): 500–505.

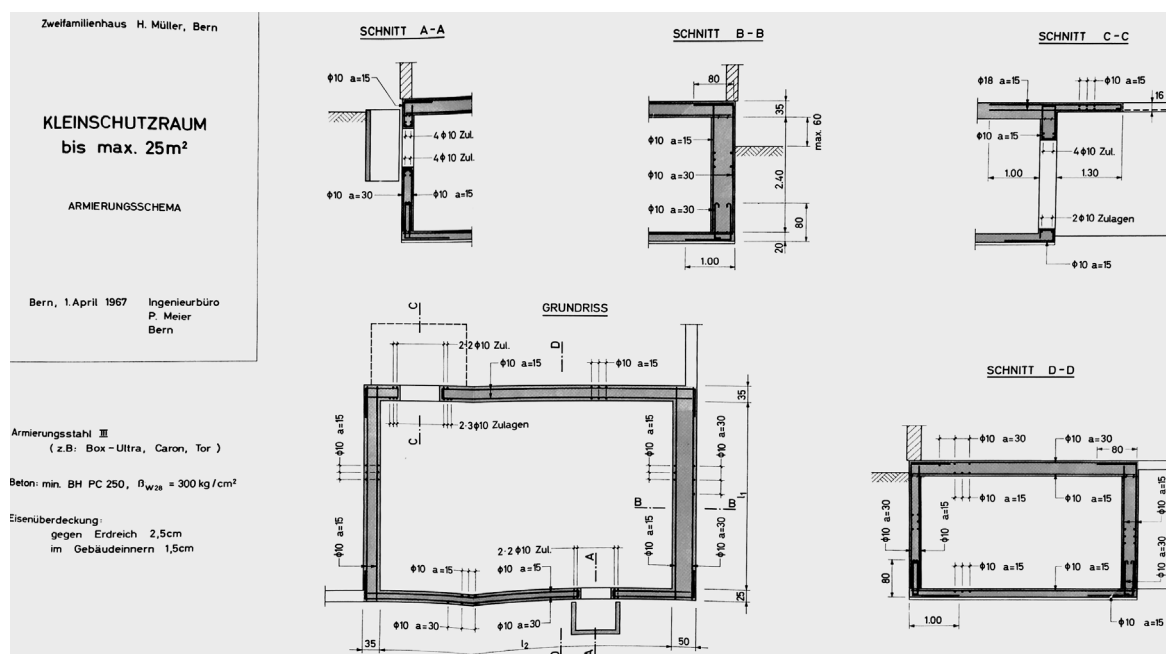
27 See Theo Ginsburg, *Grundlagen für Verlusterwartungsrechnungen*, FMB 65-13 (Zürich: Forschungsinstitut für Militärische Bautechnik, 1965); Serge Prêtre, *Untersuchungen zur Ermittlung einer optimalen Schutzraum-Konzeption*, FMB 66-2 (Zürich: Forschungsinstitut für Militärische Bautechnik, 1966).

28 Basler and Kämpfer, "Über den Wert von Schutzmassnahmen" (see note 26), 505.

survival with a specific protective measure to the likelihood of losses of life were that measure not taken. 26 The FMB then drew on specifically developed computer programs to assess the protective yield of different installations in typical Swiss settlements and was thus able to quantify the damage the Swiss population would suffer in a future war. 27 Finally, it turned its attention to the cost-benefit analysis, the purpose of which was to define the optimal scope of protection. The number crunching boiled down to a concrete question: How many lives could be saved per Swiss franc invested in shelter construction? The conclusion ultimately drawn from these optimization studies was that the investment of CHF 1,000 per person and the construction of shelters able to withstand a force of fifteen pounds per square inch (psi) would effectively reduce the number of losses in Switzerland to one-tenth, whatever the weapons used. This corresponded to an efficiency ratio of 90 percent. 28

These calculations paved the way for state endorsement of the shelter construction program. FOCP accepted the experts' opinion without a word, and shortly afterward the findings provided the basis for the *Technical Directives for the Construction*

fig.3 Schematic plan for the concrete reinforcement of a single shelter envelope in a family home.



of *Private Air-Raid Shelters* (TWP 66), published in 1966. Comprising detailed design and construction regulations for shelters able to withstand 15 psi, the manual thus embodied those gradual processes of adaptation and transformation by which the traces produced at nuclear test sites abroad were translated to the Swiss political-cultural arena, in keeping with its technological, material, and methodological agendas. The urgency of pushing through legislation, along with the broad political consensus on vertical defense, explains why the recommendations were endorsed immediately and disseminated as technical guidelines. The

seamless officialization of the technical knowledge can also be ascribed to the experts' rhetoric, which consisted of unambiguous, categorical, and quantifiable statements.

The TWP 66 was circulated with an initial print run of 46,000 copies.²⁹ The manual included planning principles for single shelters in private homes, consisting of a reinforced shelter envelope in the basement, as well as for shelter groups with multiple shelter cells. The latter were suited for larger apartment buildings and would provide protective space for up to two hundred people.



fig.1 Architects could find data on the space required per person, the height of the ceiling, the strength of the walls of the shelter envelope, the clear dimension of the standardized blast door, the layout of the entrance and emergency exit, effective ventilation systems, and the layout of the airlock system and cleaning room that were mandatory for shelters with protective space for over fifty people.

fig.2 To facilitate the dimensioning and detailing of the shelter for the engineer, a schematic plan for the concrete reinforcement of a standardized shelter in a private home was also included in the manual.

30/fig.3 The TWP 66 spurred shelter construction in Switzerland, in a climate rendered favorable by the simultaneous general building boom.³¹ From 1963 to the early 1970s, the number of nuclear shelters doubled from 50,000 to 100,000, which assured almost 50 percent of the population access to a modern, ventilated bunker.

fig.4 Shelter groups beneath apartment and office buildings, churches, or schools completed the system of single nuclear shelters in family homes, as floor plans for shelters with two separate shelter cells, an airlock system and a cleaning room in the basement of an apartment block illustrate.

fig.5 To create protective spaces for inhabitants of old buildings in historic city centers, nuclear shelters were also occasionally incorporated into new parking garages.

Economic crisis triggered by the oil shock and the introduction of austerity measures slowed the increase of bunker construction in Switzerland in the mid-1970s. Yet by the early 1980s the construction sector was booming again, and the nationwide shelter deficit was soon reduced.³² Thus, within two decades the country was peppered with highly standardized defensive "capsules,"³³ transforming Switzerland into an archipelago of insular underground entities.

29 Schweizerisches Bundesamt für Zivilschutz, *10 Jahr Bundesamt für Zivilschutz, 1963–1972* (Bern: Bundesamt für Zivilschutz, 1973), 3.

fig.4 Entrance to the nuclear shelter in my parent's family home, built according to TWP 66.

30 Schweizerisches Bundesamt für Zivilschutz, *TWP 1966: Technische Weisungen für den privaten Schutzraumbau* (Bern: Eidgenössische Drucksachen- und Materialzentrale, 1966), appendix.

31 From 1950 to 1973, the effective investment in building in Switzerland increased by 250 percent. During this period, Switzerland counted among the countries with the highest investment in building and home construction worldwide.

32 Martin Meier, "Von der Konzeption 71 zum Zivilschutz 95: Der Schweizer Zivilschutz zwischen Schein und Sein" (Master's thesis, University of Fribourg, 2007), 95, 99.

33 I adopt the term *capsule* from the philosopher Lieven de Cauter, *The Capsular Civilization: On the City in an Age of Fear* (Rotterdam: Nai, 2004), 81. In de Cauter's understanding, capsules are architectural membranes that absorb velocity and change; the active protection against hostile environments is transferred to the capsule, which renders the passenger immobile and passive.

Going Global

Since the 1970s, Swiss bunker know-how and building codes have made a splash internationally. Sure enough, the longstanding humanitarian tradition and the fact that Switzerland with its concept of armed neutrality had not been involved in an international

fig. 5 Shelter layout according to TWP 66 in the basement of an apartment building, drawn by the engineering office Heierli AG, a Swiss company specialized in constructing protection against nuclear weapons.

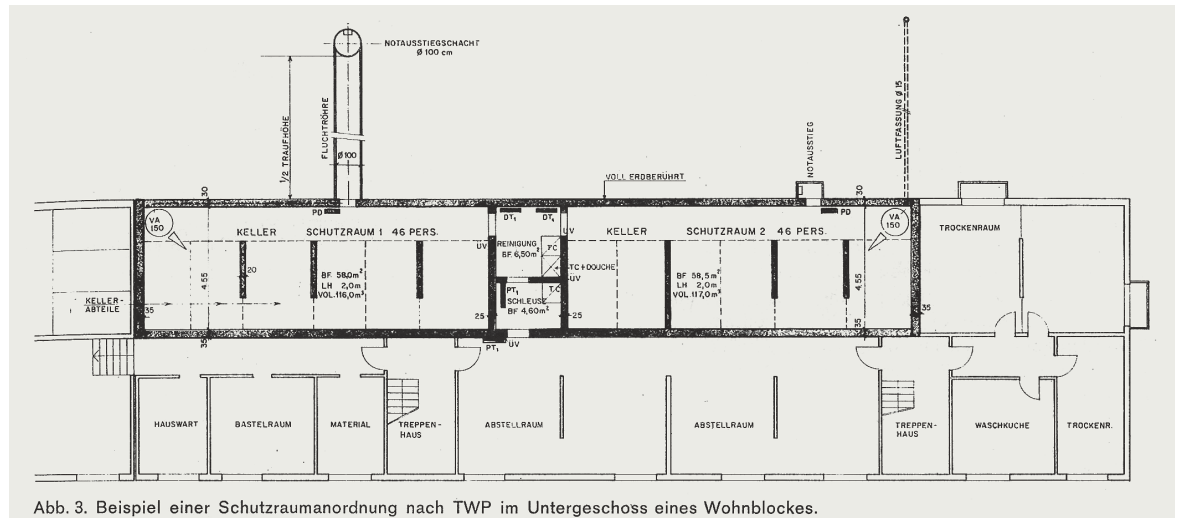


Abb. 3. Beispiel einer Schutzraumanordnung nach TWP im Untergeschoss eines Wohnblockes.

conflict since becoming a federal state helped to confer upon the country's bunker zeal an exemplary aura of trustworthiness. The Swiss themselves repeatedly characterized their civil defense shelters as "peaceful insurance" and a deterrent against outside interference and nuclear blackmail. The bunker expertise was not only closely linked to Switzerland's self-conception as an independent, purely defensive and peaceful country; it also symbolized the "Swiss" virtues that the engineers had accredited to themselves: efficiency, pragmatism, and economic thinking.

As for the information flow, FOCP made sure to distribute copies of TWP 66 to all foreign civil defense officials, asking for feedback and making public the most laudatory comments in professional journals.³⁴ From the beginning, they allowed translations and reprints (TWP 66 was translated into twelve languages) and offered to show the underground infrastructure to foreign visitors. Buttressed by various presentations and bunker tours, the country's defensive capsules started to rival the Swiss Alps as a magnet for American scientists. Among the most renowned participants in such "bunker tourism" were the atomic physicist and Nobel Prize winner Eugene P. Wigner and the legendary "father of the hydrogen bomb," Edward Teller.³⁵

The new engineering prowess fostered by the circulation of the technical guidelines and the shelter tours also became a considerable source of income. When the domestic building boom came to a halt due to the recession following the oil shock, efforts to open up new markets came to the fore. During the 1970s and 1980s, Swiss companies rapidly gained a reputation as bunker construction specialists. For such international ventures, international

³⁴ See "Die Schweiz hat die besten Weisungen für den Privaten Schutzraum-bau," *Zivilschutz: Die deutsche wissenschaftlich-technische Fachzeitschrift für die zivile Verteidigung* 11 (1967): 374; "Swiss Civil Defense 'Best in World,'" *Zivilschutz* 15, no. 7/8 (1968): 194.

³⁵ Ernst Basler, oral history interview, August 16, 2013. On Wigner's and Teller's acclaim for Swiss shelter design and policy, see Eugene P. Wigner and Walter Murphey, "Armed Neutrality," *Bulletin of the American Scientist* 31, no. 6 (1975): 2; Edward Teller, "Is Civil Defense the Way to Prevent War?" in *Civil Defense: A Symposium Presented at the Berkeley Meeting of the American Association for the Advancement of Science*, December 1965, ed. Henry Eyring (Washington, D.C.: American Association for the Advancement of Science, 1966), 134.

civil defense fairs acted as door openers. The largest of these events took place in Riyadh in 1986 and was organized by the Swiss Office for Trade Promotion. After a welcoming address by the director of FOCP and presentations ranging from shelter design to training for civil defense operations, thirty-six Swiss companies were allowed to advertise their “cost-effective” planning and design services and “efficient” products to Saudi Prince Nayif, his generals, and various ambassadors of Arab and African countries. ³⁶ The sales brochure was adorned with images of Saudis sitting in a standard shelter and the slogan “Switzerland: Your Partner in Civil Defence.” ^{37/fig. 6}

This slogan echoed all over the world, most markedly in the early 1980s, when a resurgent arms race pushed the so-called “Second Cold War.” In 1981, the country’s expertise attracted the attention of reporters from the *New York Times*, which ran a story entitled “Swiss, Determined to Survive, Dig Nuclear Shelters and Show Others How.” ³⁸ According to the *Times*, the Swiss Office for Civil Protection had had to cope with more than one thousand inquiries from foreign authorities and private firms since the beginning of 1981. As media reports in recent years have docu-



mented, Switzerland’s reputation as a “superpower underground” also caught the attention of potentates in the 1980s. When reporters from the *Al-Jazeera* network investigated Muammar Gadhafi’s Al-Baida Palace in eastern Libya in 2011, for example, they found a bunker system equipped with Swiss shelter doors and ventilation technology from the Swiss firm Zellweger Luwa AG. ³⁹ The same company also supplied parts of the nuclear command bunker beneath Saddam Hussein’s presidential palace in Baghdad. ⁴⁰ To this day, Swiss bunker design and technology still dominates the market. Swiss ventilation and filtration systems are a commercial success worldwide, as are the Swiss-made explosion protection valves and blast doors by Andair AG. ⁴¹ With survivalism edging deeper into mainstream culture and demands for doomsday shelters and technology rising, ⁴² the future for Swiss bunker products and expertise looks bright.

³⁶ “Saudisch-schweizerisches Zivilschutzsymposium,” *Neue Zürcher Zeitung*, October 21, 1986.

³⁷ Saudi-Swiss Symposium on Civil Defense Safety and Security, Riyadh Kingdom of Saudi-Arabia, October 19–22, 1986, Symposium Proceedings, annex.

³⁸ Susan Heller Anderson, “Swiss, Determined to Survive, Dig Nuclear Shelters and Show Others How,” *New York Times*, March 20, 1981.

fig. 6 Sales brochure, *Switzerland: Your Partner in Civil Defence*, 1986.

³⁹ Jacky Rowland, “A Glimpse into Gaddafi’s Palace,” *Al Jazeera*, video, 2:34, February 27, 2011, <http://www.aljazeera.com/video/africa/2011/02/20112276522858202.html> (accessed June 28, 2016).

⁴⁰ Gret Heer, “Unglückliche Hand,” *Handelszeitung*, March 24, 2011; Ruedi Suter, “Saddam Husseins verschwiegene Schweizer Bunkerbauer,” *Neue Zürcher Zeitung*, February 23, 2003.

⁴¹ The California-based company Atlas Survival Shelter, for example, relies on Swiss-made air filtration systems and blast valves. See <http://www.atlassurvivalshelters.com/features/> (accessed October 19, 2017).

⁴² Evan Osnos, “Doomsday Prep for the Super Rich,” *The New Yorker*, January 30, 2017.

Swiss air filters installed in American doomsday bunkers mark the latest step in a remarkable history that started in an era when nuclear war was anticipated, talked about, and calculated in perpetual loops. In the 1960s, Swiss engineers, thanks to the pooling of know-how and transatlantic transfers of knowledge, started to familiarize themselves with the language and technomaterial routines of weaponry-effects and protective-structures specialists. Local compilation of data, the introduction of an epistemic register of optimization, and sophisticated cost-benefit analysis subsequently transformed Switzerland into a center of calculation. Driven by a strong sense of vocation, sustained by an immense faith in their planning and design capacities, and backed by a state solidly committed to implementing their recommendations, the shelter experts were free to rationalize and standardize the prospect of a nuclear war through the application of building codes. In technical guidelines, future risks and complex threats were transformed into manageable, classifiable, quantifiable entities. Incorporating the concept of the “optimized” bunker, the building codes perpetuated the belief that security and survival are feasible even in the case of nuclear apocalypse – and prompted an unprecedented use of resources both financial and concrete material.

Poured in concrete, the results of the Cold War calculations are still present. Not only historians but politicians and the larger Swiss public will have to tackle the often unsettling affective and material qualities of these architectural capsules that permeate the domestic sphere and have quite literally brought home the theater of war.

Haunted by War:

The Strange Encounter of Paul Virilio and Bernard Rudofsky

Felicity D. Scott

In his 1976 book *L'Insécurité du territoire*, Paul Virilio made a brief but insightful and highly symptomatic reference to Austrian émigré architect Bernard Rudofsky's *Architecture without Architects*.¹ Made up of over two hundred black-and-white photographs of vernacular architecture and other preindustrial or so-called "primitive" structures, this pivotal exhibition first opened at New York's Museum of Modern Art (MoMA) in November 1964 before traveling nationally and internationally for the next eleven years. ^{fig.1} If Rudofsky's exhibition was (and remains) often received as a nostalgic attempt to recuperate or even revive "authentic," autochthonous, or premodern architectural forms—as appealing, in effect, to desires for a secure nexus of architecture, place, and



identity—Virilio rightly recognized traces of distinct, even counter-provocations. He noted, in the first instance, that the exhibition served to disrupt the mode of "passive contemplation" of "masterworks" heretofore dominating architectural discourse, including an

epistemic segregation of urban and rural domains.² In the second instance, however, Virilio surmised that far more was at stake in Rudofsky's refusal of institutionalized codifications and demarcations of architecture through formal, semantic, or functional lenses, that they shared a critique of architecture's inscription within a wider constellation of technical, economic, political, and other territorializing forces then informing the thoroughgoing militarization of the human milieu.

This recognition of shared interests appears to have been mutual. Among his papers, Rudofsky kept a copy of Virilio's "Bunker Archeology," as it initially appeared in September 1966 in *Architecture Principe*, the magazine Virilio coedited with Claude Parent. From the prevailing reception of Rudofsky as seeking a more "authentic" or "humane" form of architecture, it is unlikely to be evident why Virilio's publication on the German antiaircraft blockhouses built during the Second World War along the French littoral might have appealed to him.³ But if we shift lenses, we find two quite evident affinities. First, both Virilio's photographs of defensive redoubts and the images Rudofsky included

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¹ Paul Virilio, *L'Insécurité du territoire*, 2nd ed. (Paris: Éditions Galilée, 1993), 196. Paraphrasing Rudofsky, Virilio explains, "It is useless, in effect, to search for traces of rural habitations in the sumptuous encyclopedias of buildings, and when, in 1965 [sic], Paul Rudofsky [sic] organized the exhibition *Architecture without Architects* at New York's Museum of Modern Art, it had the effect, at the time, of both a revelation and a provocation."

fig.1 Installation view of the exhibition *Architecture without Architects*, Museum of Modern Art, New York, November 11, 1964 through February 7, 1965. Photograph by Bernard Rudofsky.

² Ibid.

³ This reception of Rudofsky dates back to the 1960s, but for more recent examples see, for instance, Karsten Harries, *The Ethical Function of Architecture* (Cambridge, MA: MIT Press, 1997); Andrea Bocco Guarneri, *Bernard Rudofsky: A Humane Designer* (Vienna: Springer Verlag, 2003); Architekturzentrum Wien, ed., *Lessons from Bernard Rudofsky: Life as a Voyage* (Basel: Birkhäuser, 2007).

in *Architecture without Architects* were chosen for their ambiguous aesthetic and semantic logics, their ability to shift back and forth from one resonance to another. Appealing to architects and designers while researching photographs for the show, Rudofsky repeatedly insisted he was not looking for picturesque images of vernacular architecture but for photographs that resonated with a modernist aesthetic. To Alfred Roth, for instance, he wrote, "I would say that we are looking for either contemporary or old examples of architecture that appeal to the modern architect and an audience with an awareness of modern design." ⁴

Many critics recognized the veiled modernist references. Douglas Haskell compared the photograph of the medieval, partially subterranean monolithic church in Saint-Émilion to Le Corbusier's church in Ronchamp, and an Italian hill town to Paul Rudolph's "Italy-in-New-Haven," arguing (incorrectly) that Rudofsky—simply looking "backwards"—failed to see that such "primitive" precedents were already present in modern architecture. ⁵ Virilio, too, mobilized potentials for semantic slippage, noting that his bunker photographs sought to evoke supplementary readings. Referring to "implicit" and "involuntary" formal affinities with "cryptic architecture," he pointed to "Mayan palaces devoid of windows and chimneys, the impenetrable forests of Egyptian columns, catacombs, the oval-shaped underground networks of the *Cathares*, the Viet-Cong sanctuaries, Faust's hermetic home, the copper mines of the Swiss mountains or the bunker." ⁶ Operating through such semantic resonances, we find a second, less evident affinity, a shared fascination with territorial insecurities that emerged during the violent wars of the twentieth century, wars forcibly impacting built environments and the forms of life they might sustain. This connection to wars originating in Europe was foregrounded in Virilio's reading of German bunkers as the territorial correlates of military strategy and ballistic technology. But, in retrospect, we do not have to look far to see that Rudofsky, too, had been musing for decades on the nexus of architecture and wars. Indeed, the subtext of war was evident in *Architecture without Architects* if one cared to pay attention.

Rudofsky's cameo appearance in Virilio's *L'Insécurité du territoire* was far from incidental. The French architect and theorist recognized the degree to which Rudofsky's invocation of vernacular forms at MoMA was launched (or relaunched) not just as a dismissal of architectural canons and modernist narratives of progress—although these were certainly targets—but served, additionally, as ciphers for territorial insecurity and war. When Virilio cited *Architecture without Architects*, it was because the exhibition was thoroughly haunted by war, as evident in Rudofsky's

⁴ Bernard Rudofsky, letter to Alfred Roth, ETH Zurich, October 22, 1962, in Curatorial Exhibition Files, Exh. 752, *Architecture without Architects*, November 11, 1964 to February 7, 1965, The Museum of Modern Art Archives, New York. I detail this claim in a longer, unpublished version of this research on Rudofsky. Rudofsky wrote to, among others, Bruno Munari, Josep Lluís Sert, Max Bill, Enrico Peressutti, and Ernesto Rogers.

⁵ Douglas Haskell noted, "As I understand the message is not directed at name architects—they are just the decoys—but at the modern world." Douglas Haskell, "Main talk at the Fine Arts Festival," manuscript for lecture at Michigan State University, Lansing, July 20, 1965. Mixed yellow note pad paper and typescript, n.p. Drawings and Archives, Avery Architectural and Fine Arts Library, Columbia University, New York, Douglas Haskell papers, box 91, folder 2.

⁶ Paul Virilio, "Architecture cryptique," in "Bunker Archeology," special issue, *Architecture principe* 7 (1966), reprinted in Paul Virilio and Claude Parent, *Architecture principe 1966 et 1996* (Besançon: Les Éditions de l'Imprimeur, 1996), n.p. See also Paul Virilio, *Bunker Archeology*, trans. George Collins (New York: Princeton Architectural Press, 1994).

ruminations on war and their reappearance in his 1964 exhibition. Haskell was not mistaken in recognizing formal affinities between the photographs of Italian hill towns and Rudolph's Art & Architecture building at Yale University. What he did not recognize was that Rudofsky chose the former not just to allude to disciplinary battles within architectural circles but to speak to a long history of architecture operating as an *offensive* medium. His enigmatic caption in the catalogue reads, "It was both more dignified and more esthetic to fight intramural battles from the vantage points of an appropriate architecture than from rooftops or in streets, as is the custom in our day." ⁷/fig.2 This argument dates back to 1934, when Rudofsky first offered a counternarrative to architects' fascination with Mediterranean vernaculars. While figures like Josef Hoffman and Edwin Cerio had celebrated the island of Capri for its unified vernacular architecture and anticipatory

⁷ Bernard Rudofsky, *Architecture without Architects* (New York: Museum of Modern Art, 1965), n.p., caption to figs. 61–66.

fig. 2 Bernard Rudofsky, photograph of Anacapri, Italy, 1934.

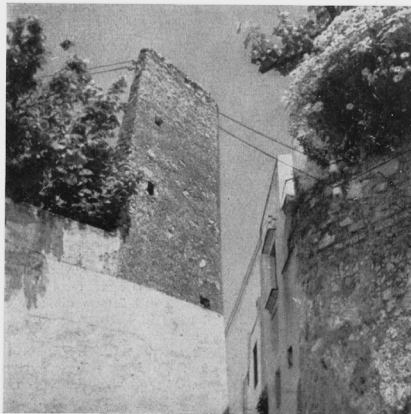


Bild 2



Bild 3

Zwei Beispiele einer Baukunst aus böser Leidenschaft: die hohen Mauern sind nur aufgeführt, um dem Nachbarn Licht und Luft zu nehmen

22

modernity, Rudofsky spoke instead of urban contestation and architectural warfare. Appropriating Cerio's term *Dispetto architecture* — an architecture of vexation or discontent — Rudofsky mused on the practice of piling up walls and towers to deprive the neighbors of "light and of the glow of the sun," reading the much-loved built landscape as "monuments of human malice." The walls, he remarked, "are as naked as the enmity of their designers and everyone can see that they serve no other purpose than to embitter their neighbor." ⁸ They were material manifestations of human enmity, battles calcified in stone.

Rudofsky's most poignant reading of architecture and war appeared in *Domus* in April 1938, the moment he fled Europe to Latin America in the wake of Nazi Germany's annexation of Austria. Entitled "Fine della città" (End of the city) — or, in the German manuscript, "Das Ende der europäischen Stadt" (End of the European city) — it stands as his most overt account of the environmental and geopolitical legacy of war and of its impact on

⁸ Bernard Rudofsky, "Capresisches, Anacapresisches," *Monatshefte für Baukunst und Städtebau* 18, no. 1 (1934): 22–4, here 22. Translation by the author. Rudofsky uses the German "Dispettoarchitektur," attributing it to Cerio but not citing his source.

architecture. Ruminating on the impending return of warfare in Europe, Rudofsky juxtaposed an autochthonous, or earth-bound form of dwelling (exemplified by a photograph taken by Giuseppe Pagano of vernacular dwellings excavated from rock in Matera, Italy), with what he called a “new mobile habitation,” or industrial trailer home. With no location specified, the trailer marked the antithesis of an autochthonous dwelling. After chastising architects’ lack of attention to the prospect of “total war,” he turned to environmental insecurities born of the First World War, noting that “With the introduction of two new types of aggressive arms or weapons, the Air Force and poisonous gas, the World War has initiated the beginning of the end of urban development.”⁹ Given transformations in military strategies and with civilians now targeted for destruction, cities, he posited, no longer offered refuge or protection from ballistic weaponry, their very *raison d’être* undermined. In Rudofsky’s words,

*“An aerial photograph of any city convincingly demonstrates the fate of the city dweller. Military strategists pronounced their verdict long ago: One cannot, in the future, count on an effective defense of the city. The possibilities of defense cannot keep pace with offensive weaponry, precautions and defensive measures imposed on open cities have not produced improvements, nor have serious studies followed.”*¹⁰

As Rudofsky knew well, the history of European cities was one of transformations in defensive strategies — from walls, moats, and other fortifications to new materials and construction technologies — in response to new ballistic technologies and other forms of matériel. All such strategies, he suggested in “Fine della città,” were redundant when weapons could be delivered from the air or when the air itself was under attack. In his estimation, “The European city will become a theater prop or historical curiosity, like the feudal castle. The ruins may find conservationists and enthusiasts — but they will no longer be suitable for inhabitation.”¹¹

Furthering his dialectic of rootedness versus displacement, Rudofsky speculated that the next generation of Europeans would have to choose between two dwelling options: the habitable cave and the mobile home, updated versions of the “primitive” troglodyte and nomadic structures such as tents. (In “Fine della città” this dualism serves as an allegory of distinctions between the fixity of trench warfare or fortification, such as the ill-fated French strategy of the Maginot Line, which Rudofsky parodies as a giant troglodyte city, and the mobility pursued by the British through tanks and rapidly deployable prefabricated structures.) Rudofsky was not advancing the cave or mobile home as prescriptions for how architects might respond to war, but as a dialectic pointing

⁹ Bernard Rudofsky, “Fine della città,” *Domus* 16, no. 124 (1938): 20–21, here 20. Translation by the author, derived from the Italian publication and German manuscript in Bernard Rudofsky’s personal archive.

¹⁰ Ibid., 21.

¹¹ Ibid., 20. On architecture and aerial warfare, see Jean-Louis Cohen, “The Menace from the Air,” in *Architecture in Uniform: Designing and Building for the Second World War* (New Haven: Yale University Press; Montreal: Canadian Center for Architecture, 2011), 141–79.

to conditions of environmental (and psychological) insecurity born of modernity and a continuing state of warfare. Hence, it would be a mistake to imagine that he prioritized the embeddedness of vernacular rock dwellings over the uprooting suggested by the industrial trailer or that the trailer promised a more modern or emancipated life. Rudofsky's own "answer" to such a condition of territorial insecurity would take the form of a courtyard house that could drift, a house offering a degree of psychological security that he ominously likened to a stockade, a technology of colonization.¹²

In his ruminations on nomadism, Rudofsky first invoked the lifestyles of European Roma, presenting them as living anachronisms and noting of their political system that they "describe themselves as a nation and come together in the Hungarian lowlands to elect their king." After situating "gypsies" as a "primitive tribal stage" of nomadic civilizations (Rudofsky was often this insulting in his figuration of alterity), he turned to their American counterparts:

*"The inhabitants of the United States already refer to themselves as 'The Nation on Wheels.' This epithet is not based simply upon the pride of ownership of a few million automobiles. It refers, rather, to a population striving toward nomadism. Hundreds of thousands of families have abandoned house and land in order to create for themselves new possibilities for living in a permanent state of travel. The government of the country has not tried to prevent but rather promotes this movement."*¹³

Without the experience of a recent war on their soil, but with governmental encouragement, millions in the United States, Rudofsky posited, sought life as a permanent voyage. Acknowledging that technology for mobile dwellings had not arrived in Europe to the same degree, he argued that the incentive for their use was, nevertheless, in place. In this context, he noted that "the impending destruction of cities [might] get the most sedentary people to adopt the life of continuous movement."¹⁴

It was not just the bombing of cities that drove such uprooting and displacement of European populations during the first decades of the twentieth century. Having grown up in Austria-Hungary, at the edge of Eastern Europe, Rudofsky was all too familiar with the massive and violent displacement of minority populations and the plight of refugees following the redrawing of European political borders after the First World War, including the breakup of European and Eurasian, land-based empires: Austro-Hungarian, Tsarist, Ottoman. Born into a formerly Jewish family (his parents converted to Roman Catholicism in the late nineteenth century), he was also no stranger to the

¹² On this reading of Rudofsky's courtyard houses, see Felicity D. Scott, "Not at Home," in *Émigré Cultures in Design and Architecture*, eds. Alison J. Clarke and Elana Shapira (London: Bloomsbury Publishing, 2017), 221–34.

¹³ Rudofsky, "Fine della città" (see note 9), 21.

¹⁴ Ibid.

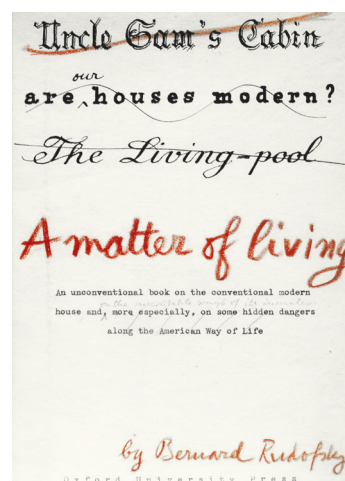
15 On this violent history, see Hannah Arendt, "The Decline of the Nation State and the End of the Rights of Man" (1951), in *The Origins of Totalitarianism* (New York: Schocken Books, 2004), 341–84; Mark Mazower, *Dark Continent: Europe's Twentieth Century* (New York: Vintage Books, 2000).

violence of anti-Semitism. In the first months of 1938, however, he might not yet have known of the massive rise of stateless people, *Heimatlosen*, or of *apatrides*, those having no home, nor homeland to which to return, that erupted in Europe at this time as Nazi Germany targeted minority groups such as Jews, Armenians, and Roma for exclusion and even for denaturalization and deportation to concentration camps, prior to their ultimate mass murder. 15 Rudofsky's exaggerated poles of rootedness versus deracination — the troglodyte's extreme identification with the soil and the mobile home's radical dislocation — would, however, take on additional valence in the wake of that revelation, appearing as a key subtext of *Architecture without Architects*.

A quizzical note from the *Domus* editors, "End of the City?," pointed to a paradox that Rudofsky indeed would puzzle over in the decades to come: it stressed the importance of his observation that, while cities in the United States did not seem threatened with the immanent tragedy of war, a spirit of modern nomadism had developed there that warranted attention. If European populations were threatened with further uprooting and dislodgment on account of rising tides of nationalism and other forms of hatred and violence, what, the editors asked, in the absence of the threat of war and territorial claims, sponsored such a drive toward mobility in America?

Following his emigration from Brazil to the United States in 1941, this constellation of architecture, war, caves, and nomads — one wavering ambivalently between archaisms and forces of modernity — surfaced over and over. For instance, we find it in Rudofsky's long-standing study of the house that began in the late 1940s under the title "Are Houses Modern?" before splitting into his 1955 book *Behind the Picture Window* and the exhibition *Architecture without Architects*. Early outlines for "Are Houses Modern?" included topics such as: Migratory trends in history and modern time; insecurity and its relation to war-making; the limits of modern hospitality; shelter, not industry, the main target in modern war; density of population and dispersion; the "rooted" versus the abstracted house; and, return to primitive dwelling types — Fuller house, Nissen, and Quonset hut. In another version of his outline dated January 1948, he added a note, "Hiroshima. Cave dwellers. Maginot line", updating the nature of the perceived threat of attack from the air to include atom bombs. *Architecture without Architects* included references to all of these tropes. For example, we

fig.3 Bernard Rudofsky, sketch for book cover, c.1954.



learn that in China “about ten million people live in dwellings hollowed out from loess,”¹⁶ ominously continuing, “having been among man’s earliest shelters, [caves] may turn out to be his last ones.”¹⁷ With reference to Cold War divides, and with less irony than is warranted, he suggested of aerial photographs shot by a Nazi Luftwaffe pilot that “with current restrictions on the movements of the citizen” it would be impossible to “duplicate the aerial views of Chinese underground communities obtained by a German pilot in the early 30s.”¹⁸

¹⁶ Rudofsky, *Architecture without Architects* (see note 7), caption to fig. 16.

¹⁷ *Ibid.*, caption to fig. 3.

¹⁸ *Ibid.*, page opposite fig. 6.

By the height of the Cold War, Rudofsky had incorporated a new matrix of technologies, economic paradigms, and geopolitical shifts within his ruminations about troglodytes and nomads. In addition to speaking of people not tied to the soil or even the conventional nation-state—wavering ambivalently between figures of liberty and legacies of aerial warfare—mobile dwellings

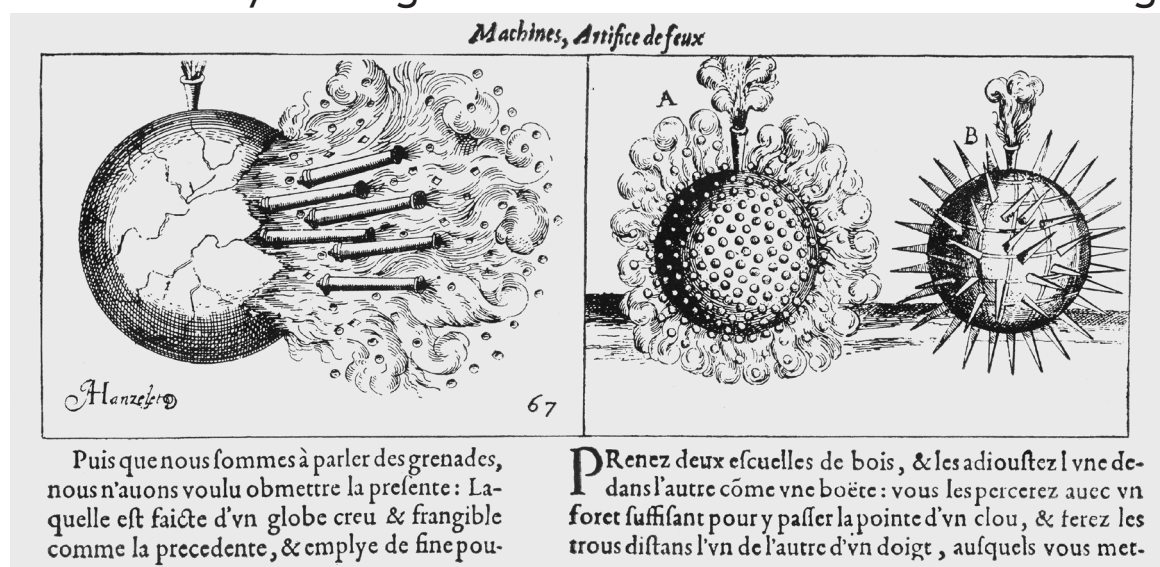


fig. 4 Jean Appier Hanzeler, “Machines, artifice de feux,” c.1620 and 1630.

appear now as ciphers of the insecurity born of the circulation or drift so necessary to the globalizing logic of postwar capitalism. It was not, that is, just aerial warfare or developments in ballistics that rendered domestic, urban, and national boundaries outdated. As *Behind the Picture Window* made evident, at stake was recognizing the invasion of domestic life by technoscientific and economic paradigms born of military research launched during the Second World War—from advances in communications technologies and computerization to social scientific knowledge bent on psychological and environmental control—along with an expanded consumerism and its dispersed regulatory apparatus.¹⁹ While he did not use such a vocabulary, Rudofsky recognized that the house played a key role within emergent forms of national and global governance, serving as perhaps the most intimate site through which micropolitical forms of power operated upon the body and psyche both of individuals and populations. Yet, in defiance of such forms of subjective regulation

¹⁹ See Felicity D. Scott, “Instrumentos para vivir,” in *Bernard Rudofsky: Desobediencia crítica a la modernidad*, eds. Mar Loren and Yolanda Romero (Granada: Centro José Guerrero, 2014), 106–24, plus English text 328–34.

20 On this other intimacy, see Felicity D. Scott, "Underneath Aesthetics and Utility: The Untransposable Fetish of Bernard Rudofsky," *Assemblage* 38 (1999): 58–89.

21 Michel Foucault, "The Right of Death and Power over Life," in *The History of Sexuality*, vol. 1, *An Introduction*, trans. Robert Hurley (New York: Random House, 1990), 143.

22 Bernard Rudofsky, "The Quiltmakers," *trans/formation: arts, communication, environment* 1, no. 2 (1951): 62–64. On *trans/formation*, see Anna Vallye, "The Strategic Universality of *trans/formation*, 1950–1952," *Grey Room* 35 (2009): 28–57. Rudofsky was not alone during this period in imagining nuclear warfare returning human beings to a "primitive" state. See Paul Boyer, *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age* (Chapel Hill: University of North Carolina Press, 1994).

23 Rudofsky, "Quiltmakers" (see note 22), 63.

24 Ibid., 64. If quilt-making was, on the one hand, a vernacular handicraft of the early settlers of the Northeastern seaboard, it is also identified with the African-American practice of sewing stories in this form. It is not clear which tradition Rudofsky is referencing, but I suspect the former.

and environmental conditioning, Rudofsky continued to assert possibilities for modes of desire and intimacy or even simply aberrant behaviors somehow not yet colonized by such an apparatus. 20 This was an intimacy conceived not in the service of authenticity or a more humane form of architecture but rather as a tactic for cutting across such vectors and techniques of power, as attempts to interrupt or otherwise rearticulate those dominant forces and techniques as they met the body. "It is not that life has been totally integrated into techniques that govern and administer it," Michel Foucault reminded his readers: "it constantly escapes them." 21

Rudofsky published "The Quiltmakers" in 1951. ^{fig.4} The essay appeared in the multidisciplinary journal *trans/formation: arts, communication, environment* and took the form of a post-apocalyptic parable about the end point of the Cold War military-industrial complex or and what Rudofsky called its "global thinking": "total war." In his satirical tale, the tax system, government, military leaders, scientists, planners, and commercial media have become integrated into a perverse "experiment to end all experiments," that of developing the "arts of modern warfare" to achieve total destruction through nuclear warfare. 22 This "project to discontinue life on earth," he posited, originated with the "white race," but its "proud idea of perfect genocide will probably remain forever impracticable." 23 The "next postwar era," in his telling, was divided into a "primitive" white tribe who had been confined to a small area on the North American continent due to radiation, and a more advanced people among whom all particularity had been diffused. Following "a relapse into peaceful barbarism" lasting hundreds of generations, a small group of these isolated "white" survivors was discovered. The discovery was made by "gray invaders"; gray, as he indicated (problematically), "because the [other] races will long have merged into a neutral blend." These travelers realized the "ethnological value" of the unusual creatures, and – after setting aside reservations for them to ensure their survival – undertook an ethnological study of their ritualized ceremonial dances, legends, social structure, diet, and craft techniques. Within their "blurred history," tales of mobility remained, mythical recollections of "heroic times, when men could fly through the air like birds, and swim forever under water like fish." Some of their war dances, Rudofsky wrote, "mimic birds of prey bringing death from the air. ... Towards the end of the performance, the chief, Cloud of Death, joins in the general pandemonium." Parodying fantasies of a world fully dominated by technology, this "primitive" culture retained only a haunting after-image of the promise of freedom once ascribed to travel. 24

Rudofsky's parody of man's quest for total domination over nature aimed to upturn conventional hierarchies but ultimately did not undermine the myth of racial superiority. Only the "white race" retains cultural specificity, albeit so radically transformed as to retain only haunting traces of technologies, habits, and



fig. 5 Installation view of the exhibition "Architecture without Architects," Museum of Modern Art, New York, November 11, 1964 through February 7, 1965. Photograph by Bernard Rudofsky.

customs once wielded to such violent ends and on asymmetrical playing fields. Deconstructing hierarchies is not, of course, as simple as turning them on their heads. Racism, along with other forms of violence, power, and exclusion work in more complex ways, and

Rudofsky's writings, particularly those of the 1960s, are characterized by an almost total lack of attention to racism in America or to anticolonial struggles and wars of national liberation. "The Quiltmakers" is a rare exception to this elision, albeit an ambiguous one. And what of the "end of white man's civilization?" he queried in this context.

"May we not take the abdication of the Dutch in Oceania, or the British in Asia and Egypt as a portent of the approaching self-effacement of the white race? A white skin does not make a better man. We have had our time—a long, beautiful and bloody stretch of time. This time is running out; we know it and no foolish talk is going to stop us from our noble sacrifice." ²⁵

²⁵ Ibid.

Rudofsky's thoroughgoing eurocentrism, even when performed with irony, reminds us that his much-celebrated opening of architectural canons to vernacular forms, and its purportedly "global view," was far from politically progressive. ²⁶ What Rudofsky recognized, however, was that if one sought an image of an end point, a negative condition to the total domination of "profit and progress," it might be recognized in the threat of total nuclear war and its global effects.

²⁶ The term *global view* is used in Victoria Donohoe, "Striking Architecture Shows," *Philadelphia Inquirer*, January 9, 1966, clipping courtesy of Berta Rudofsky.

I want to return, now, to Virilio's citation of *Architecture without Architects* in *L'Insécurité du territoire*. **fig. 5** Theorizing the complex and shifting relationship of wars and environments, Virilio argued that "Total world war," a war without limits or end, a war without respect for national boundaries, had warped into "total peace." Driven by the neoimperial logics of the United States and mobilizing the language of "freedom," that supposed peace, he detailed, had adopted lessons from the Second World War. Mirroring the economic calculus and technological

rationalities and developments, as well as the geopolitical logics of total war, the total peace engineered by the United States sought to perpetuate the nation's global dominance in the wake of widespread decolonization. Tracing a historical trajectory from the use of mustard gas in Europe and its colonies to the defoliation or ecocide then taking place in Vietnam, Virilio concluded that "the war of milieu is succeeded by war waged on the milieu — nature, society."²⁷ In his opening chapter, Virilio had invoked terms familiar from Rudofsky's long-standing fascination with troglodytes. For this fear of the environment had given rise to men " 'who burrow, who dig ... who deprive themselves voluntarily of air, who come to love the night.' Everywhere there is recourse to the crypt, to the subterranean, to the underwater, to the cave."²⁸ But *L'Insécurité du territoire* was also where Virilio introduced the interrelated concepts of nomadism and deterritorialization, more familiar to most from the second volume of Gilles Deleuze and Félix Guattari's work on "capitalism and schizophrenia," *A Thousand Plateaus*.²⁹

Within the paradigm of liberalism Virilio sets out, the ability to circulate and the provision of basic amenities sustaining biological life appears "in effect *like the ultimate tangible support of liberties, of the citizens.*"³⁰ Yet this was not how such a system of circulation and assistance functioned. Quite the opposite. Virilio recognized in this historical transformation a dramatic shift in the relation of a subject to its milieu. This took the form of a de- and reterritorialization that strategically replaced a political relation to territory — a relation based on law, rights, or citizenship — with a subject's reduction to an "anonymous organism" for whom the state provides for the minimal satisfaction of needs considered "indispensable to life" while inscribing them within a system of technocratic management operating in the service of the U.S.-led global economy. Recalling Rudofsky's concerns, Virilio posited that nowhere was this pernicious logic more evident than "in the context of the legislation of space."

*"It is this disinterested character which guarantees in fact the right to circulate or to stop ... allowing the inhabitants to move about at will, that is to say, to pre-exist in an everyday state, to recreate it at leisure, inalienably, in simply pitching a tent or parking a camper. We know what sorts of persecutions these dynamic notions of social space entail: for example, the diverse forms of nomadism, objectified by totalitarian states, the treatment of the gypsies and the bohemians under the Third Reich, and, today, the laws of assistance which force them to settle."*³¹

Recognizing a new paradigm of sovereignty at work in "the unique precariousness" of subjects inscribed within this apparatus,

²⁷ Paul Virilio, "Suicidal State," in *The Virilio Reader*, ed. James Der Derian, trans. James Der Derian, Michael Degener, and Lauren Osepchuk (Malden, MA: Blackwell Publishers, 1998), 30. Initially appeared as "L'État suicidaire," in *L'Insécurité du territoire* (see note 1).

²⁸ Virilio, "Suicidal State" (see note 27), 35.

²⁹ See Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987).

³⁰ Virilio, "Suicidal State" (see note 27), 38. Emphasis in original.

³¹ Ibid.

he remarked, “for the man thus exposed, assistance has become survival, non-assistance a condemnation to death.”³²

³² Ibid.

Virilio did not speak directly to Rudofsky’s obsession with war. Rather, Rudofsky provided him with a model of escape from regulatory overcoding, both semantic and functional. Virilio turned to *Architecture without Architects* in a chapter titled “Habiter l’inhabituel,” pointing to a desired deterritorialization of a dwelling’s intended or normative function, manifest as a critique of architectural functionalism and other forms of rational calculation as they impacted a subject’s relation to the milieu. Rudofsky was obsessed with possibilities for refusing the dictates of fixed or functionalist relations between a subject and its milieu, repeatedly railing against all forms of forced integration within an environment. To Virilio, too, the functionalist ethic had effectively eliminated or “quenched” open-ended potentials at play within architecture. Functionalism was, he remarked, a “desperate endeavor to intervene in affective space,” to submit space to a normative ordering or organization.³³ “Faced with the ongoing suppression of the aleatory and the indeterminate,” Virilio had scoffed earlier in the book—reminding us of a connection to war—and with the “progressive annihilation of the independence between: Time/Space/Subject,”—as most violently expressed in the warfare launched by the Third Reich—“the analysis of transgression of use is imperative.”³⁴ In excavating this “dialogue” between Rudofsky and Virilio, the point is not to suggest that Rudofsky theorized such concerns in advance of Virilio but that his attempts to navigate the nexus of architecture and war, and the manner in which it continued to haunt him into the mid-1960s, afforded him a type of historical insight that was legible to Virilio and that is, once again, worthy of revisiting, no matter how problematic Rudofsky remains.

³³ Virilio, *L’Insécurité du territoire* (see note 1), 198. Translation by the author.

³⁴ Virilio, “Suicidal State” (see note 27), 41.

Barricade Urbanism:

The Case of Contemporary Fortifications in Lahore **Ayesha Sarfraz and Arsalan Rafique**

Lahore, the second-largest city in Pakistan, has been witness to one of the highest numbers of bomb attacks in the region. Situated near the heavily guarded border the country shares with India, the city's relevance as a case study for urban transformation in the age of asymmetric warfare and contemporary conflict is amplified when considered in the light of its history as the imperial capital to various rulers and, as such, its having been repeatedly fortified and refortified, with each instance revealing frameworks of control used to create borders and barriers that curtail the right to the city. This is exemplified in the present-day remains of its ancient walls, which encompass the old quarters torn down by the British after the annexation of the Punjab in 1849, after which the city was expanded and replanned using techniques that afforded the colonizers greater control over the territory and helped curb civil unrest. The recent trend of securitization illustrates that the territory is again being shaped to absorb the violence and conflicts that seem to be on the rise globally. If the urban language of any human settlement is indicative of its sociopolitical environment, then the ubiquity of barricades, blockades, and checkpoints in Lahore speaks volumes about the prevalent state of (in)security. The architectural vocabulary of these overdetermined borders has been legitimized by

the state through a discourse based around anxiety, fear, and threat. This apparatus of control is further reinforced with extreme measures of electronic and armed surveillance techniques that make no distinction between security for the public and against it. The advent of "barricade urbanism," largely justified by the assumption that a public setting can be a potential target of violence, correlates with a decrease in civilian liberties throughout the city, as manifested in the widespread erasure of democratic spaces from the public domain.

One of the most important arteries in Lahore, the Mall, is a significant example. A nineteenth-century British colonial boulevard flanked with government buildings, religious centers, universities, and commercial areas, it regularly functions as a stage for political demonstrations. Its historical and current relevance to the territory makes it a highly charged area, affected by numerous bombings and violence in the last two decades, resulting in an aggressive landscape of security paraphernalia. Whereas barricades are usually introduced in space, and at times validated, because of their ephemeral properties of mobility and impermanence, many on the Mall have been concretized over time as both formal and informal states of exception were declared. The Punjab Assembly building at Charing Cross on the Mall is a significant case in point. The barricades and armed checkpoints adorning the perimeter of the building have devolved into permanent concrete

SECURITY APPARATUS AGGREGATION MALL ROAD - LAHORE

(AS OF SEPTEMBER 2017)

LAHORE MAP

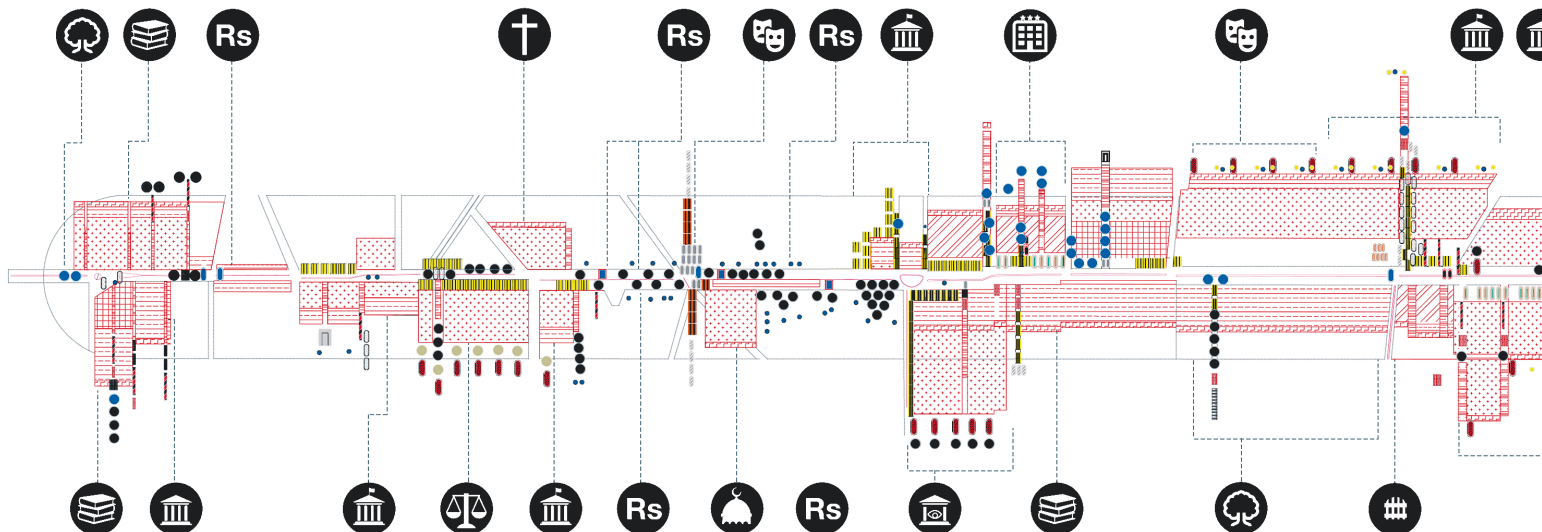


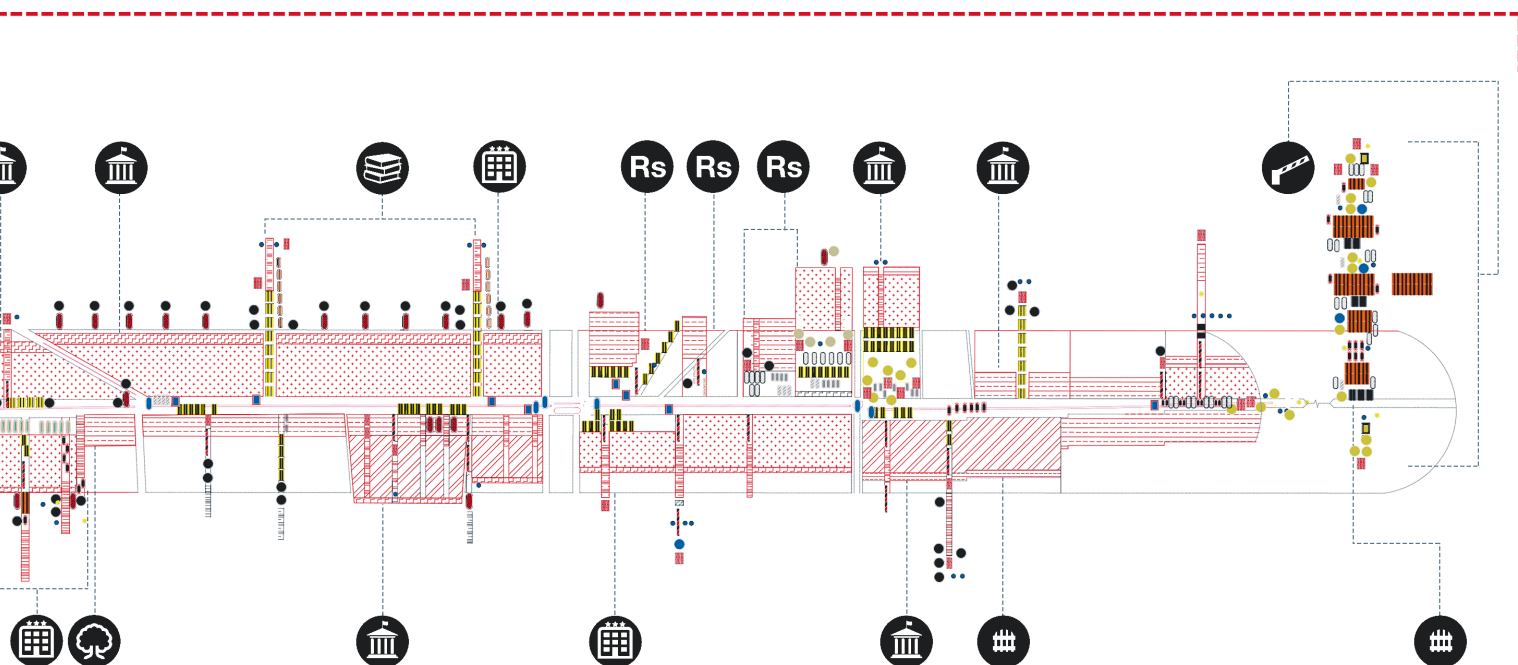
THE MALL CONNECTS THE BRITISH-MADE CANTONMENT TO THE OLD QUARTERS OF THE CITY. MADE IN THE LATE 1800s IT IS ONE OF THE PRIME ARTERIES OF LAHORE, THAT HAS WITNESSED BOMB BLASTS AND ARMED ATTACKS IN THE LAST TWO DECADES. IT IS ALSO A PROMINENT SITE FOR POLITICAL DEMONSTRATIONS AND PUBLIC PROTESTS.

LEGEND

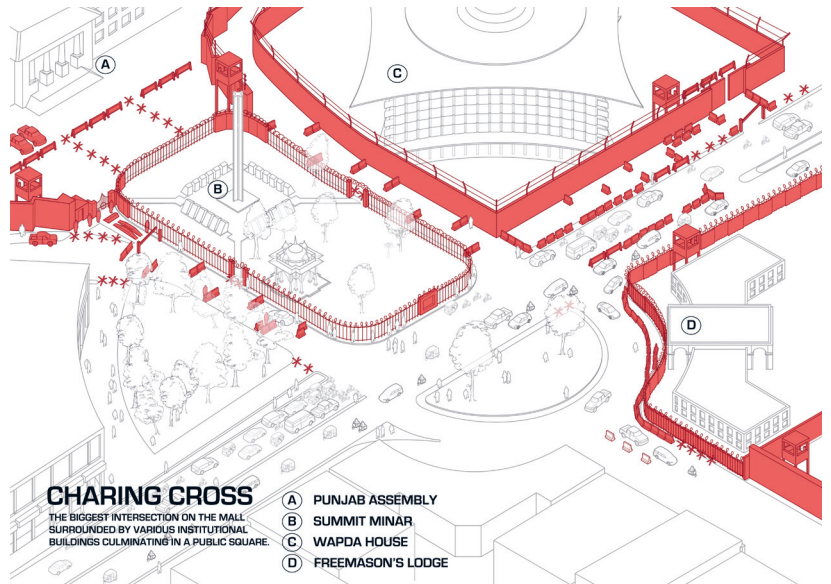
-  COMMERCIAL CENTER
-  EDUCATIONAL
-  PARK & OPEN SPACES
-  CHURCH & SEMINARIES
-  CULTURAL CENTER
-  HOTELS & HOSPITALITY

THE MALL - FLATTENED STRETCH - 6.5 KM (3.97 MILES)

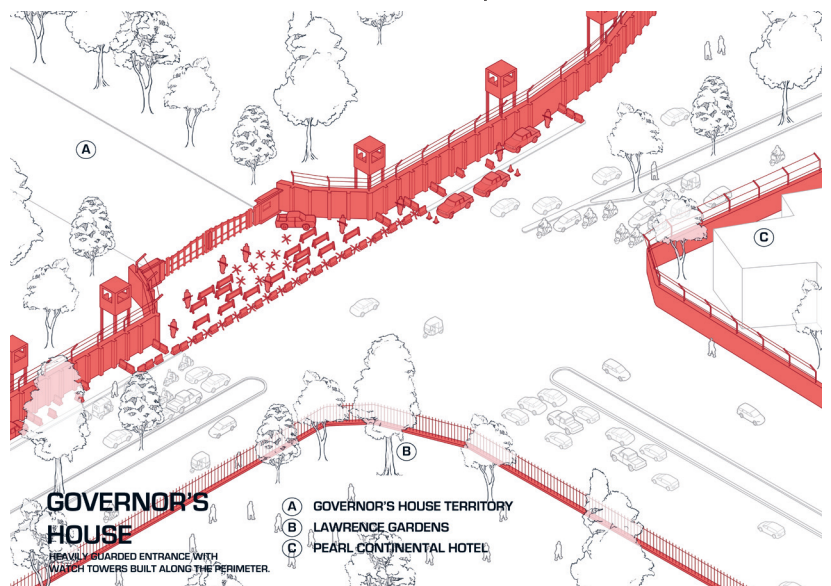




walls of up to fourteen feet in height, reinforced with metal fences, barbed wire, and surveillance equipment. However, despite such measures, in February 2017 a suicide bomber attacked a protest at Charing Cross, killing fifteen and injuring about one hundred. As a result of these physical and symbolic security tactics, which were previously limited to controlling accessibility, transparency has been replaced with permanent visual and physical obstruction. Spaces previously open to the public are subtracted from the urban landscape under the guise of mitigating the threat of violence, rendering them remote and exclusionary.



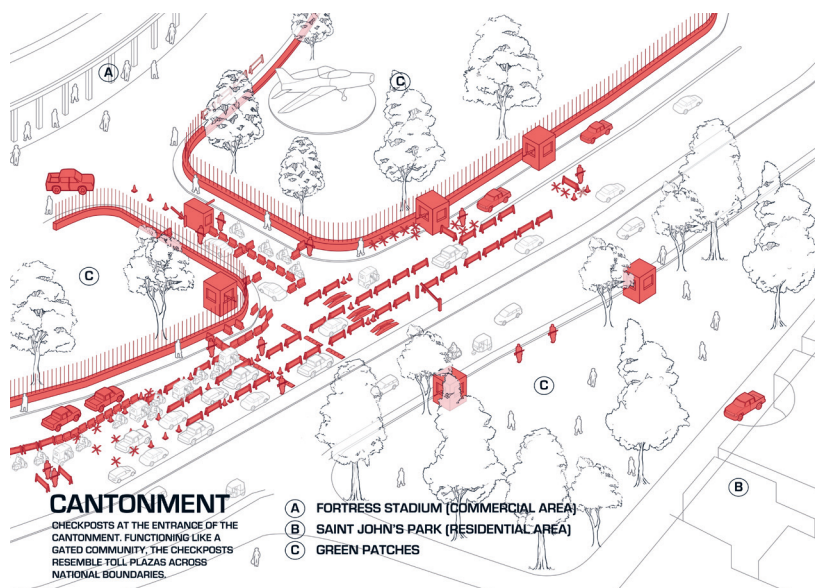
Similar examples of security have been concretized at numerous government and religious buildings, as well as schools and universities, all of which have been targeted in recent years. A significant example is Data Darbar, a thirteenth-century Sufi shrine to the patron saint of Lahore, where thousands, irrespective of sex, age, cul-



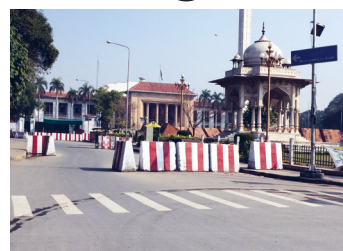
ture, or religion, pay their respects every day. After Data Darbar was targeted by a suicide bomber in 2010, killing more than fifty people while injuring around two hundred, security was drastically heightened at all major Sufi shrines in the country. The state now requires visitors to go through slaloming barricades and severe security measures before entering the premises, which are deemed “secure” through both active and passive surveillance methods. As increasing numbers of formerly public spaces are subtracted from the urban realm, we must examine the long-term value and social and political repercussions of such strategies, especially since the intensity of security sometimes seems to increase not in proportion to physical threats but in response to political campaigns. These fear-inducing security tactics fuel a culture that discourages people from venturing out into the public sphere and helps the state to exercise control over the narrative of contemporary conflicts that plague Pakistani cities.

As the state intensifies its efforts to securitize “sensitive” zones, parallel civilian initiatives have been undertaken to create checkpoints and limit access to neighborhoods that fall outside the government’s interest and control. The increase in new and retrofitted gated communities in Lahore is testament to the variety and ad hoc nature of the security strategies deployed by various actors. The legality of these acts of self-defense is questionable from the perspective of the planner but is unofficially endorsed by

the state, if not readily sanctioned. As a result, the number of private security companies has increased across the country, promising safety the government has failed to provide. The Cantonment,



ment, a military-controlled area containing army infrastructure as well as an elite residential and commercial neighborhood for civilians, is an extreme example of a retrofitted gated community. Once open, it is now physically fortified with concentric wall constructions guarded by labyrinthine weaponized checkpoints and barricades. Checkpoints, whether within the Cantonment or otherwise, have been frequent sites of attacks throughout Pakistan. Rather than the opacity of walls, checkpoints are semipermeable thresholds, implying that all civilians are potential suspects who are subject to all forms of interrogation. The permeability of these barricades fluctuates with the level of perceived threat, allowing and restraining mobility as required. Although increased opacity and inaccessibility have rendered these physical boundaries mostly untraversable and rigid, the polysemic nature inherent in any barricade serves as a tool of selective exclusion and social division.



While questions about the effectiveness and legality of barricade urbanism are impending, its ubiquity will continue to be mandated because it helps to establish a perpetual state of fictitious emergency regardless of the presence of clearly



identifiable dangers. The impact of these temporal structures on urbanscapes and human sensibilities are of prime importance. The most relevant of these effects is the physical and social fragmentation



of the city, evident in the aggressive encroachment onto previously public domains such as parks, marketplaces, and shrines. Barricades, as temporary

forms of architecture, produce disruptions in territory by changing, almost retarding, the agency of urbanity while framing the transient and permanent in antagonistic ways. Furthermore, strategies of surveillance and increasing limits born of



physical or administrative control are reducing the already confined pockets of democracy or democratic space.

While the issue of insecurity is still evolving and gaining momentum both locally and globally, cities are on the frontline where diffusive geographies of threat and conflict materialize into built fabric and its



destruction as well. These matters must be handled with a critical understanding and a multipronged approach that caters to civilian safety but does not

forget that cities are ever-evolving and ever-adapting organisms and that the concretization of security alone will not contain, mitigate, or eradicate threats and conflicts.

figs. 1–4 Mall road securitization diagram; security at Charing Cross; security at the Governor’s House; security at the check post at the entrance of the Cantonment. Illustrations by Ayesha Sarfraz and Arsalan Rafique, 2018.
figs. 5–10 Lahore Barricades: perimeter wall and approach to the Punjab Assembly; entrance to the Sufi shrine; police blockade; concrete barriers by the Wapda House. Photographs by Ayesha Sarfraz and Arsalan Rafique, 2018.

Radio as Architecture: Notes toward the Redefinition of the Berlin Walls Alfredo Thiermann

"Walls are the armoury that preserves our personal integrity against the inroads of the rest of humanity and nature,"¹ Robin Evans writes in an essay about walls published in June 1971. In the essay, Evans proposes a reading of that fundamental element — the wall — under the light of an "environmental history of the war against information."² Here, architecture is understood not as buildings, necessarily, but as delineated terrains, artificially manufactured by the material qualities and geometric dispositions of walls — from the Great Wall of China to the aesthetic retreat designed by Jean Des Esseintes, protagonist of the canonical novel *À rebours* by Joris-Karl Huysmans. Throughout Evans's analysis, walls are understood as mediations in "two distinct, but not mutually exclusive ways: retreat and exclusion."³ Exclusion is the act of secluding a small portion of individuals outside of the "world." The walls of asylums, clinics, and prisons materially construct this form of exclusion. On the other hand, retreat is an act in which an individual or small group voluntarily secludes themselves from the "world" using walls, "circumscribing and forgetting about those parts of it that offend them."⁴ But surprisingly, Evans does not mention the single most relevant wall of the time, built exactly a decade before the publication of his essay: the Berlin Wall. Whether voluntary or not, the omission leaves his argument partially incomplete, and today the questions underlying it have become more relevant than ever before. In an age where the presence, transaction, and exchange of information is ubiquitous — extending far beyond the limits of the planet but also deep within our bodies and penetrating almost every aspect of daily life — it seems relevant to reframe the historical problem of walls, limits, and information.

With a different sensibility and using a different medium, North American composer Frederic Rzewski chose to refer explicitly to the Berlin Wall. In a chronicle published in the Swiss magazine *Du atlantis*, Rzewski describes his experience commuting from one side to the other of divided Berlin, going — almost on a daily basis — to work on a musical piece commissioned by Berliner Rundfunk (Radio of Berlin) in 1965.⁵ Rzewski, who was a fellow of the Ford Foundation in West Berlin, describes his daily routine as "the hardly-believable transition between two different worlds coexisting side-by-side."⁶ His composition was meant to transgress precisely that radical juxtaposition — one constructed by the Wall — by being broadcast, through the electromagnetic field of radio, across all physical and political borders.

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¹ Robin Evans, "The Rights of Retreat and the Rites of Exclusion: Notes towards the Definition of Wall," *Architectural Design* 41, no. 6 (1971): 335–39, here 337.

² *Ibid.*, 335.

³ *Ibid.*, 336.

⁴ *Ibid.*, 335.

⁵ The Berliner Rundfunk was a radio station established by the Soviet Military Administration and later adopted as a radio station in the German Democratic Republic.

⁶ Frederic Rzewski, "Notizen zu 'Zoologischer Garten'" *Du atlantis* 26 (1966): 942–44, here 942. Translation by the author.

The piece was meant to be broadcast on FM radio in 1966 in what would have been the first open electronic music concert in the German Democratic Republic (GDR). Had the piece been broadcast, its sounds—an original creation of the Subharchord synthesizer developed by East German engineer Ernst Schreiber in

fig.1 Subharchord synthesizer inside the Labor für akustisch-musikalische Grenzprobleme.

7 See Gerhard Steinke, "Experimental Music with the 'Subharchord' Subharmonic Sound Generator," *Journal of the Audio Engineering Society* 14, no. 2 (1966): 140–44.

8 Rzewski, "Notizen" (see note 6), 942. Translation by the author.

9 The Labor für akustisch-musikalische Grenzprobleme was part of the Betriebslaboratorium für Rundfunk und Fernsehen, renamed in 1962 as Rundfunk- und Fernsehtechnisches Zentralamt (RFZ). The Betriebslaboratorium was established in 1949 (from 1949 to 1957 it had a different name) and was the research lab—dependent on the Ministry of Post and Telecommunications of the GDR—in charge of scientific research related to radio and television. For the history of the Labor für akustisch-musikalische Grenzprobleme, see Tatjana Böhme-Mehner, "Berlin was Home to the First Electronic Studio in the Eastern Bloc: The Forgotten Years of the Research Lab for Interdisciplinary Problems in Musical Acoustics," *Contemporary Music Review* 30, no. 1 (2011): 33–47.

For the original composition, listen to Frederic Rzewski, "Zoologischer Garten: Einzelspuren auf zwei Kanälen," 1965, in Akademie der Künste, Berlin (AdK), Sammlung Audiovisuelle Medien (AVM), Tonbänder (AVM-31) 08251-2, 23/05." For the noise samples developed for the composition, listen to Frederic Rzewski, "Zoologischer Garten: Beispiele zum Geräuschkatalog," 1965, in AdK, AVM-31 08261-3.



1961—would have been a complete novelty for the listeners on both sides of the Iron Curtain: nobody had heard such sounds before. ⁷ Described by Rzewski as "one of the major advances in the field of electronic instruments" and as an "extension of the human body," ⁸ this artifact—which not only performed but also fabricated the sounds and thus the very medium of the composition—was developed at the Labor für akustisch-musikalische Grenzprobleme (Laboratory for Boundary Problems in Musical Acoustics), founded in East Berlin in 1956. ⁹ The synthesizer had been assigned a specific function: that of producing a new kind of sound through electronic synthesis and, with it, a new kind of acoustic space. **fig.1**

The resulting twenty-three-minute-long musical composition, titled "Zoologischer Garten," ¹⁰ is an ensemble of six seemingly unrelated fragments bound by the medium of magnetic tape and making explicit reference to the multiworld Rzewski experienced in Berlin, thus providing a mysteriously precise commentary on the early effects of the Berlin Wall at the scale of the city. Based on the experience of being confronted with two radically different realities just by the act of crossing a wall, Rzewski recorded how the wall divided the city and simultaneously created contrasting proximities. At the same time, the technological, aesthetic, and political conditions under which the music was conceived were designed to make it transgress the agency of that very wall, going straight through it. Rzewski's composition

thus casts light over other walls, which have been long overlooked. By revealing the intricate relationship between buildings, synthetic sounds, and electromagnetic waves, the piece opens the door to a media-archaeology ¹¹ of Berlin and its walls (including *the Wall*) in the age of radio, helping also to rethink and expand Evans's theory of retreat and exclusion. What follows is a reconstruction of what I call the *architecture of radio*, exploring the ways in which walls, broadly understood, can construct spaces, and how ideas of space and sovereignty influence the conception of these walls in an age where the historic solidity of architecture has been challenged by the radical effects of radio.

¹⁰ See Wolfgang Ernst, *Digital Memory and the Archive* (Minneapolis: University of Minnesota Press, 2013), 55–73.

1 The beginnings of the *architecture of radio* can be traced to the intertwined but widely overlooked history of buildings built for radio broadcasting, starting in the Germany of the Weimar Republic. This history begins with the Großfunkstelle Nauen (Nauen transmitter station), commissioned to be designed by Herman Muthesius and completed in 1920, 40 kilometers west of Berlin. A few years later, in 1926, the Funkturm Berlin was completed after the design of Heinrich Straumer in the city's Westend. Portrayed by László Moholy-Nagy in 1928 as an emblem of the transparent, translucent, and apparently ephemeral modern times, the Funkturm was located on the Messegelände (exhibition grounds) planned by Martin Wagner and Hans Poelzig. Later, it was wired to a much more massive building across the street, the 1931 Haus des Rundfunks, also designed by Poelzig. ^{fig.2} During the Second World War, the Haus des Rundfunks worked in connection with another building, the Deutschlandsender III, located in Herzberg, 90 kilometers south of Berlin. The Deutschlandsender III was the single tallest structure in Europe – a 325-meter-high steel



fig.2 Haus des Rundfunks seen from Masurenallee.

11 Gerd Klawitter, ed., *100 Jahre Funktechnik in Deutschland: Funksendestellen rund um Berlin* (Dessau: Funk Verlag Hein, 2004).

12 Albert Speer, *Inside the Third Reich* (New York: Simon & Schuster, 1997), 275.

fig. 3 Deutschland-sender III in Herzberg.

13 Charles I. Bevans, ed., *Treaties and Other International Agreements of the United States of America, 1776–1949*, vol. 3 (Washington: Department of State, 1969), 1, 124.

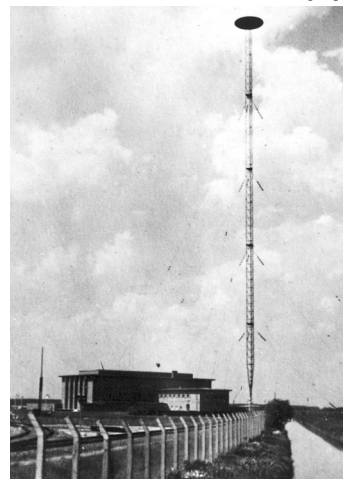
14 Christopher Classen, "Jamming the RIAS: Technical Measures against Western Broadcasting in East Germany," in *Airy Currents in the European Ether: Broadcasting and the Cold War*, eds. Alexander Badenoch, Andreas Fickers, and Christian Henrich-Franke (Baden-Baden: Nomos, 2013), 321–46, here 323. Classen uses the notion of "war in the airwaves," but he also refers to the German original, "Krieg im Äther," which translates as "war in the ether."

15 Friedrich Kittler, "Unconditional Surrender," in *The Truth of the Technological World*, ed. Hans Ulrich Gumbrecht (Stanford, CA: Stanford University Press, 2013), 195–208, here 203.

tower, only a few meters shorter than the Empire State Building – and it enabled the Third Reich to broadcast across most of the European territory. 12/fig. 3

On March 19, 1945, Adolf Hitler issued his so-called "Nero Decree" (*Nerobefehl*), an order declaring the mandatory destruction of "all military transportation, communications, industrial, and supply facilities within the Reich that the enemy might in any way use, immediately or in foreseeable time, to continue fighting." 13 However, in May of the same year, Soviet occupation troops made two important moves in German territory. The first was to occupy the Haus des Rundfunks, then located in the British-occupied sector. The second was to dismantle the Deutschlandsender III. The broadcasting house designed by Poelzig therefore survived the Nero Decree. The transmission tower was removed, defying the explicit prohibition signed by the Allies, specifying that "No ship, vessel, or aircraft is to be scuttled, or any damage done to their hull, machinery or equipment, and also to machines of all kinds, armament, apparatus, and all the technical means of prosecution of war in general." 14 Both transgressive acts were as symbolically important as they were technically relevant, and served as the prolegomenon to what has been called "war in the ether" between the Eastern and Western blocs. 15 This notion refers to the conflicted media exchange across the Iron Curtain that took place during the Cold War years. It is exemplified by the BBC's *East Zone Programme* targeting Eastern Germany; by Radio Free Europe broadcasting "objective" news and entertainment from Munich; by Rundfunk im amerikanischen Sektor's (RIAS) *Aus der Zone für die Zone* (From the zone, for the zone) program broadcast from West to East Berlin; and the GDR's Berliner Rundfunk and Radio Berlin International, broadcasting music, news, and political propaganda in ten languages from Berlin throughout the world.

The idea of ethereal war – central for the understanding of the dynamics of the so-called "postwar" in Germany – mostly alludes to the remote exchange of information and entertainment across the Iron Curtain. But what is at stake here is how that apparently immaterial exchange was physically and materially constructed. At its core was a process that Friedrich Kittler defines as "technology transfer." 16 By this notion, the German media scholar refers to the process of conservation and appropriation of German-designed electronic media-technologies during the Second World War and their latter adaptation into the mainstream



media industry after the end of the armed conflict. By scaling up Kittler's notion to the size of buildings, one can see how both the Western Allies and the Soviets realized early on the relevance of the *architecture of radio*. Within the process of technology transfer, not only tape recorders, mixing boards, and radio ampli-



fiers were preserved, but also whole building typologies, such as the broadcasting house and the transmission tower. Thus, buildings were transferred and protected as one among many other media artifacts, halfway between a technological

gadget and a piece of infrastructure. The bricks (as material), the walls (as elements), and the floor plans (as *dispositifs*) were passed from one system to the other. ¹⁷

The first frictions between blocs were made evident precisely by the two sides' attempts to gain access to the seemingly invisible and immaterial technology of radio by taking control of specific—and highly material—artifacts on the ground. On the one side, already in 1945—and just a few days after having occupied the Haus des Rundfunks—the Soviets took control of Sender Tegel, a transmission tower located in the French-occupied sector. Once in control of Poelzig's building, the tower, and a group of former Nazi radio technicians, the Soviets began their own radio transmissions. On the other side, the Americans were slower to understand the relationship between architecture and the ethereal medium. Access to Soviet facilities was denied to them in 1945, a first sign of hostility from the East toward the West. Therefore, the Americans had to rely on an older standard: wire. ¹⁸ In 1946, they occupied the Fernmeldeamt (telephone exchange building), designed by Berlin architects Otto Spalding and Kurt Kuhlowl in 1929. Besides the stylistic similitude with Poelzig's design—visible in the so-called *Backsteinexpressionismus* (brick expressionism)—the most important characteristic of the Fernmeldeamt was that it was directly wired to most Berlin houses through telephone lines. When the Drahtfunk im amerikanischen Sektor (DIAS) began its broadcasting activities in 1945, it did so via telephone, utilizing the old *Drahtfunk* technology—wired broadcasting—and reaching only 1 percent of the Berlin audience. ¹⁹ Through wires, instead of electromagnetic waves, the Americans temporarily sought to create an alternative *architecture of radio*. In 1948, after transforming the walls of the former I.G. Farben

fig. 4 RIAS's Broadcasting House portrayed on a postcard. The postcard was sent to local and international audiences requesting feedback about signal reception of RIAS's short-, mid-, and long-wave transmissions.

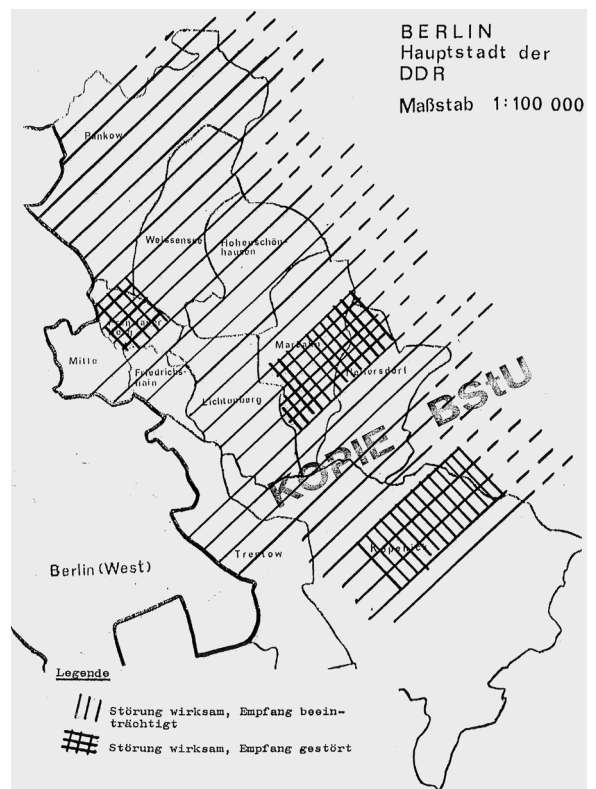
16 The tape recorder—the gadget that transformed the music industry in postwar Britain and the United States—was a technology developed by German engineers during the Second World War. See John T. Mullin, "Creating the Craft of Tape Recording," *High Fidelity Magazine* 26, no. 4 (1976): 62–67; Peter Hammar and Don Ososke, "The Birth of the German Magnetophon Tape Recorder 1928–1945," *db Magazine* 16, no. 3 (1982): 47–52.

17 Architekten- und Ingenieur-Verein zu Berlin, ed., *Berlin und seine Bauten*, pt. 10, vol. B: *Anlagen und Bauten für den Verkehr* (4): *Post und Fernmeldewesen* (Berlin: Ernst & Sohn, 1987), 137.

18 Nicholas J. Schlosser, "The Berlin Radio War: Broadcasting in Cold War Berlin and the Shaping of Political Culture in Divided Germany, 1945–1961" (PhD diss., University of Maryland, 2008), 98.

fig.5 Map of radio jamming in East Berlin.

(Interessengemeinschaft Farben-industrie AG) industrial building into its first official broadcasting house ^{fig.4} – and wiring it to an improvised transmission tower located in Britz – DIAS, now able to broadcast using radio waves, finally became RIAS. By the time of the official division of Berlin in 1949, however, RIAS was the most popular radio station in both East and West Berlin, being centrally directed and highly prescribed by the American federal government through the Allied High Commission for Germany. ²⁰



19 Ibid., 19.

2 The manipulative power of “capitalist” media seemed almost impossible to subdue only through propagandistic political speech, and the GDR lost significant influence on both sides of the Wall. ²¹ This, together with the escalation of the political conflict – which forced the GDR’s Berliner Rundfunk to leave its walled enclosure at Poelzig’s Haus des Rundfunks in the British sector – motivated a radical reaction to the East’s *architecture of radio*. In 1952, the GDR decided to centralize all of its broadcasting stations, creating the Staatliches Rundfunkkomitee (State Radio Committee) in an effort to overcome East Germany’s secondary position in the ethereal war. This process of centralization triggered two significant operations. The first was an anti-RIAS media campaign, ²² and the second was a redesign of all media content produced by the GDR’s broadcast institutions. Both strategies were widely carried out through architecture; in particular, through a sophisticated understanding of the agency of walls.

At a territorial scale, the most important and aggressive movement was the jamming of undesirable “capitalist frequencies” emitted by RIAS in the West. With great secrecy, the GDR began to grid Berlin with an array of lightweight movable transmitters. ²³ A map developed by the Stasi (the GDR’s Ministry of State Security) shows the impact of these transmitters, together with the transformation of what a wall might be under the logics of radio. ^{fig.5} The zones demarcated by single diagonal lines show the areas of partial jamming. Where those lines are intersected by perpendicular ones, the jamming was effective

²⁰ See Nicholas J. Schlosser, “Creating an ‘Atmosphere of Objectivity’: Radio in the American Sector, Objectivity and the United States’ Propaganda Campaign against the German Democratic Republic, 1945–1961,” *German History* 29, no. 4 (2011): 610–27. See also Don R. Browne, “RIAS Berlin: A Case Study of a Cold War Broadcast Operation,” *Journal of Broadcasting* 10, no. 2 (1966): 119–35.

²¹ See Nicholas J. Schlosser, *Cold War on the Airwaves: The Radio Propaganda War against East Germany* (Urbana: University of Illinois Press, 2015), 108.

²² Classen, “Jamming the RIAS” (see note 15).

(i.e., total). By 1957 the GDR had built over three hundred jamming transmitters, which performed as virtual walls protecting ethereal sovereignty.²⁴ These “radio-activities” transformed Berlin’s urbanism into an ocean of invisible, overlapping concentric and radiating circles rather than two sectors divided by clearly defined lines. They illustrate the fact that media creates space, that there is no perfectly negative wall under the logics of radio, and that “information, as such, may be morally neutral but it is certainly not inactive,” even at an urban scale.²⁵ The strategic location of buildings loaded with radio-emitting and radio-receiving capacities turned Berlin into a synthetic geography, a manufactured terrain in which the traditional urban elements of streets, blocks, and squares coexisted with the overlapped agency of different kinds of walls fighting to turn noises into signals and signals into noise. Even before the construction of the concrete Berlin Wall, this material fabrication of noises and signals twisted and expanded the dialectic conceptualization of the wall in terms of retreat and exclusion from information. As shown on the map, the boroughs of Prenzlauer Berg, Marzahn, and Köpenick were circumscribed and walled by noises interfering with signals emit-

²³ Schlosser, *Cold War on the Airwaves* (see note 22), 127.

²⁴ Evans, “Rights of Retreat” (see note 1), 335.



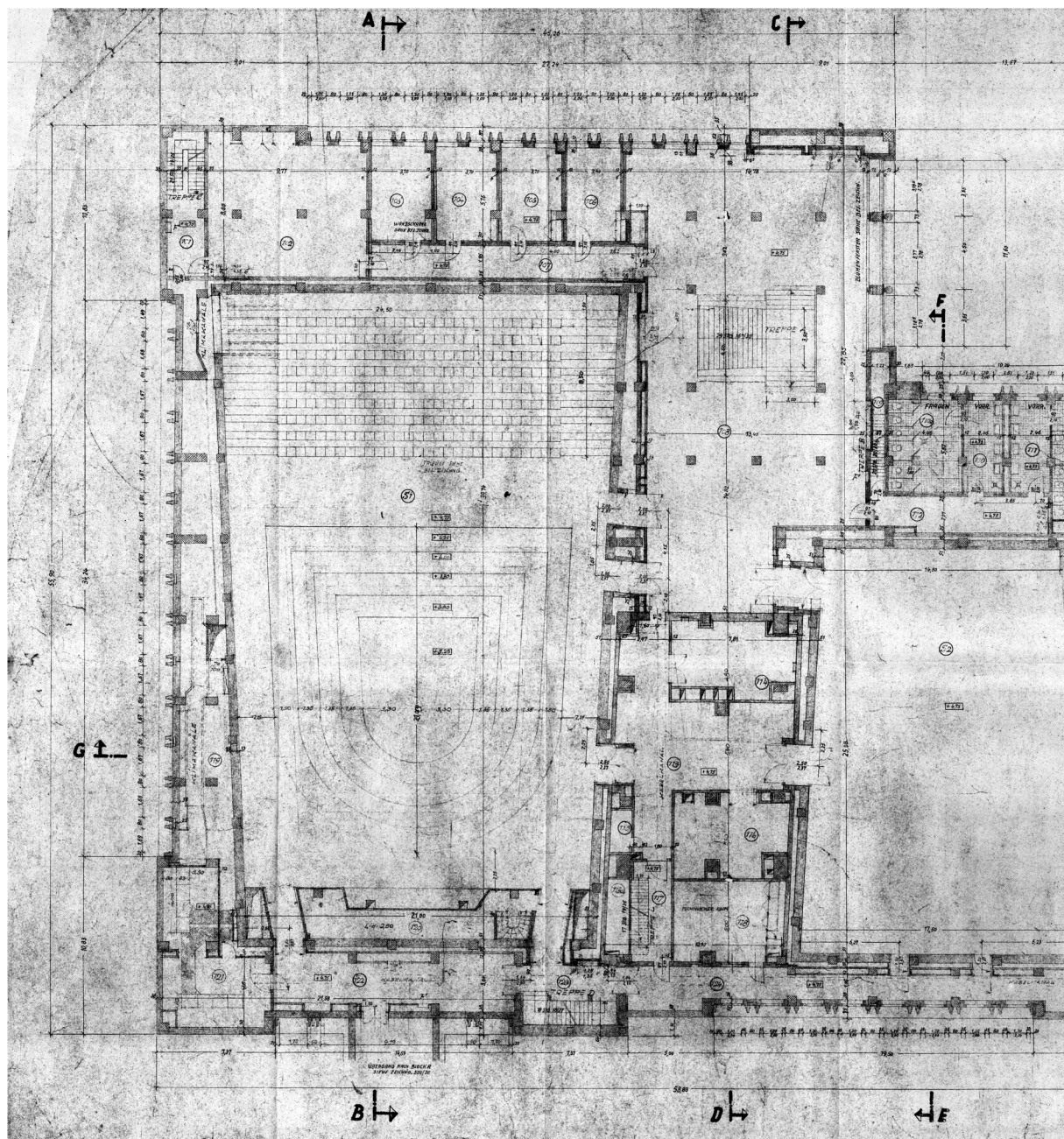
fig. 6 Funkhaus Berlin-Nalepastraße seen from across the Spree River.

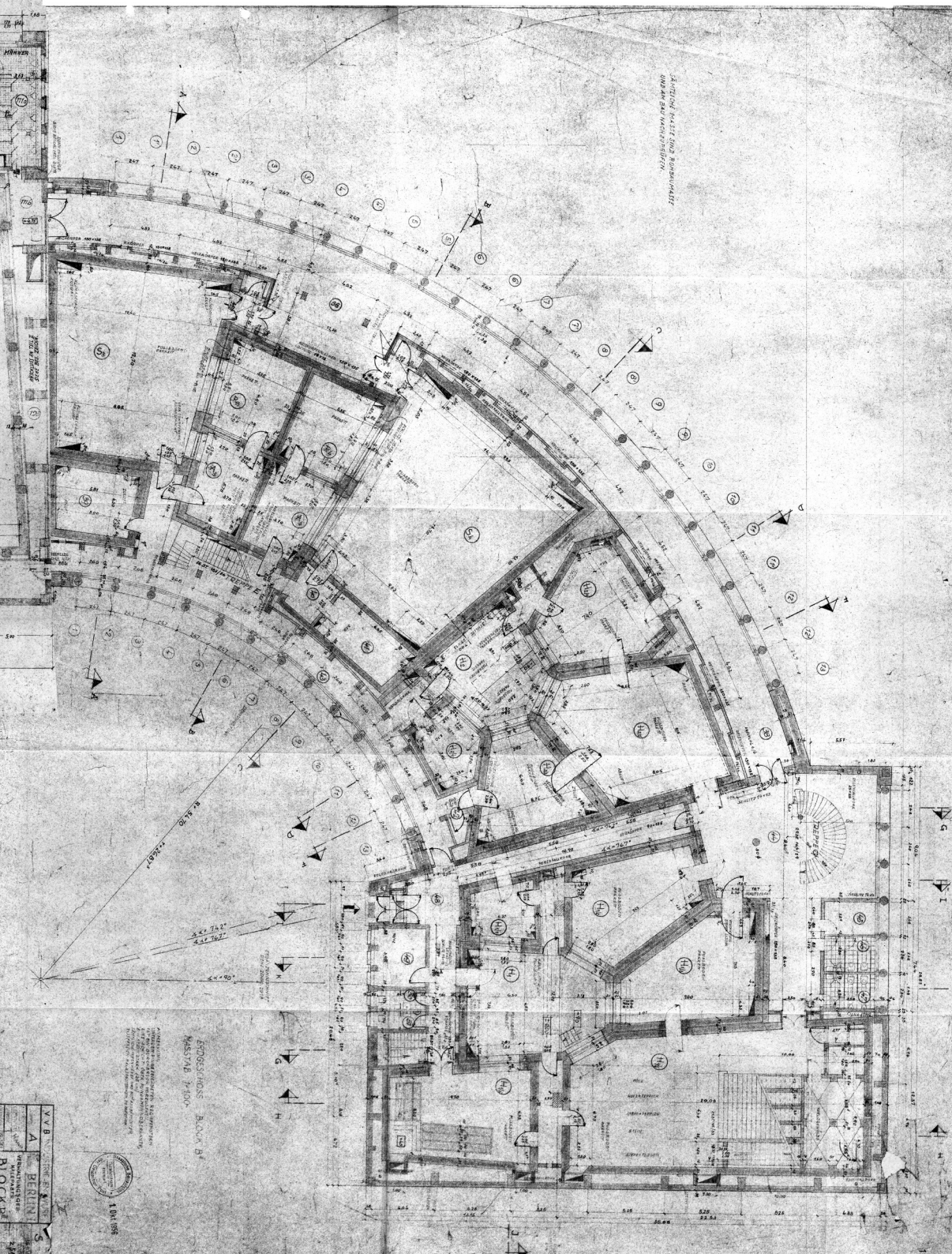
ted from the secluded and walled West. Instead of clearly defined retreats and exclusions, the environment is structured by nesting, temporally defined, and simultaneous thresholds.²⁶

At another scale in this environmental war for and against information, the establishment of the Staatliches Rundfunkkomitee had a significant impact on the creation and dissolution of radio stations and institutions within the GDR. Following a complex process of bureaucratic transformation, a range of media-institutional

²⁵ Accepting a degree of generalization in the city structure of Berlin, Prenzlauer Berg was a residential district with a fluctuating population but relevant for the GDR for its proximity to the newly planned center of Alexanderplatz. Marzahn was a district that concentrated massive *Plattenbau* or prefabricated housing complexes for the working class. Köpenick was an industrial area in which, probably not coincidentally, the GDR’s “media industries” for radio and television were located.

fig.7 Block B Floor
plan Funkhaus
Berlin-Nalepastraße.





reorganizations was materialized in one particular building. In the crucial year of 1952, the architect Franz Ehrlich was commissioned to design the new headquarters for radio in the GDR, the Funkhaus Berlin-Nalepastraße. Completed in 1956, it was the most complex iteration in the concretization of the typology of the broadcasting house. The Funkhaus, executed in the context of the ethereal Cold War, was clearly designed and shaped by the internal forces of the GDR's broadcasting program and the external political forces of the time. ^{fig. 6}

Ehrlich studied at the Bauhaus from 1927 to 1930 and was a student of Moholy-Nagy, who at the time was working on the Funkturm photographs. This was also when Oskar Schlemmer was aiming to "dissolve the subject" into circular radiating patterns, as expressed in the design of the costumes for his performances. ²⁷ Simultaneously, Siegfried Ebeling was thinking space, through its relation to electromagnetic radiation, as a membrane. ²⁸ While a student, Ehrlich worked with Walter Gropius in the Totaltheater project for Erwin Piscator ²⁹ and also as an intern in Poelzig's office at the time Poelzig was working on the Haus des Rundfunks. ³⁰ Spanning a period from the Weimar era to Cold War Germany—including time as a Nazi prisoner, during which he was forced to work on the design of concentration camps—Ehrlich's career embodies both the shift and transformations of the broadcasting house typology and the impact of radio onto how space was thought, created, and perceived. ³¹ It is not by chance that the Funkhaus Nalepastraße shares certain morphological and stylistic characteristics with Poelzig's building. In the Funkhaus, one can still perceive echoes of *Backsteinexpressionismus* and the long frontal facade reminds one of its western predecessor. Even the characteristic curvilinear corridor with studios attached to one side remains in Ehrlich's design, although no longer in a symmetrical order.

If at the scale of the territory the location of jamming transmitters was about the erection of a wall for turning signals into noise, at the scale of the building the aim was to build walls whose agency would create new and recognizable sonic content. The complex organization of walls in Ehrlich's design follows a precise and heterogeneous set of programmatic, geometric, and performative requirements. In the original publication of the building in the journal *Deutsche Architektur* in 1956, Ehrlich describes the Funkhaus as "one external house and eight internal houses." ^{32/fig. 7} Indeed, the structure is based on a house-within-a-house scheme, with the "exterior house" built out of load-bearing concrete walls partially clad with brick. Its relatively superficial foundations leave the program above the level of the ground,

²⁶ See Noam M. Elcott, *Artificial Darkness: An Obscure History of Modern Art and Media* (Chicago: Chicago University Press, 2016), 175–82.

²⁷ Siegfried Ebeling, *Der Raum als Membran* (Dessau: C. Dünhaupt Verlag, 1926).

²⁸ Franz Ehrlich, "Bauhaus und Totaltheater," *Wissenschaftliche Zeitschrift der Hochschule für Architektur und Bauwesen* 29, nos. 5/6 (1983): 424.

²⁹ Bernhard Kohlenbach, "Franz Ehrlich – Ein Architekt zwischen Bauhaustradition und DDR-Baudoktrin," *ICOMOS – Hefte des Deutschen Nationalkomitees* 20, (2015): 44–47, here 45.

³⁰ According to the available sources, Ehrlich's role in designing concentration camps mainly involved interior and fence design. See Volkhard Knigge et al., eds., *Franz Ehrlich: Ein Bauhäusler in Widerstand und Konzentrationslager* (Weimar: Stiftung Gedenkstätten Buchenwald und Mittelbau-Dora, 2009). See also Michael H. Kater, *Weimar: From Enlightenment to the Present* (New Haven: Yale University Press, 2014), 247.

³¹ Franz Ehrlich, "Aufnahme- und Studiogebäude des Staatlichen Rundfunkkomitees," *Deutsche Architektur* 9 (1956): 399–409, here 400. Translation by the author.

avoiding complexity and excessive costs in the construction (a consequence of the building's close proximity to the Spree River), and large concrete beams allow a free span from side to side. The other seven "interior houses" are structurally independent from the exterior one and are constructed using a sophisticated



fig. 8 View of one of the control rooms in Block B.

system of multilayered double walls. Wires and technical facilities occupy the technical poche between them, allowing the interconnection of spaces not through circulation, necessarily, but through electricity at the speed of light. Notwithstanding – or precisely

because of – the wire-less nature of radio, everything needed to be and could be wired within the Funkhaus.

Looking from right to left at the floor plan of Block B, the part of the building complex containing the recording studios, the first "house" is a cluster comprising five rooms surrounding a six-sided *Regieraum* (control room) designed to perform and record radio plays. Each side of the control room connects with a separate room through an acoustically sealed window. The visually connected but sonically hermetic spaces collapse in the mixing board and the tape recorder installed in the control room. They literally act as *Raummaschinen* (space machines), because all the discreet sounds produced within the different rooms are routed by wire to the machines occupying the central space.³³ The walls defining the cluster therefore perform as material and spatial extensions of the montage-capacities of the mixing board and the tape recorder, mediating between discreet sonic signals and the electronic machines. fig. 8

A corridor separates this cluster from another that follows similar morphological and programmatic principles. The adjacent trapezoidal space, Saal IV, was designed to record dance music, with a reverberation time of 1.2 seconds.³⁴ The four trapezoidal rooms that constitute the fourth "house" are small, intended for the recording of solos. Each room is acoustically and visually independent from the others. The large trapezoidal room of Saal III also has a reverberation time of 1.2 seconds and was designed for the recording of chamber music. A trapezoidal shape is used for all the music recording rooms to avoid the acoustic problems of parallelism. Slight variations in angles – combined with the differing materiality of each wall – give individual

³² The notion of "Raummaschine" was used by Ehrlich himself to describe his collaboration with Gropius in the Totaltheater project design for Piscator in 1927. See Ehrlich, "Bauhaus und Totaltheater" (see note 29). While in the context of the theater the notion refers to the mechanical adaptability of the stage in order to blur the boundary to the audience, and allow simultaneous performances, in the context of the Funkhaus and its electronic media apparatus it can be understood as a description of the ability to allow the simultaneous coexistence of various sonic spaces and to join the record studios with a much wider audience.

³³ Reverberation time, usually counted in seconds, is the duration between the emission of a sound and the decay in its intensity below the level of human perception, as it echoes in a room. For an early study on reverberation time, see Wallace C. Sabine, *Collected Papers on Acoustics* (Cambridge, Mass.: Harvard University Press, 1922).

rooms unique sonic signatures. The adjacent large trapezoidal room, Saal II, was designed for small orchestras, with a reverberation time of 1.4 seconds. Saal I, or the Grosser Sendesaal (reverberation time: 1.8 seconds), is located at one extreme of the complex spatial distribution and can fit an entire symphony orchestra. It is the largest recording studio in the world. Finally, two control rooms—one facing Saal II, the other facing Saal I—separate and mediate both major rooms within the building. However, what is most relevant in Saal I is the absence of an audience. In previous iterations of the broadcasting house typology, plan and program were basically structured around a normal concert hall, with a stage and an audience in front. The Funkhaus, in contrast, contains a highly refined concert hall with practically no place for a physically present human audience. Musicians are “like in a tub ... floating in space,”³⁵ and newly engineered Neumann CMV 551 condenser microphones—floating in space, too, according to a precise placement designed by the engineer Klaus Wagner—replace the listeners.^{36/fig. 9}

³⁴ Ehrlich, “Aufnahme- und Studiogebäude” (see note 32), 402. Translation by the author.

³⁵ Klaus Wagner and Wolfgang Hoeg, *Stereofonie-Aufnahmetechnik* (Berlin: VEB Technik, 1970), 80–6. See also Alexander Raschkowitsch, “Neue Musik- und Hörspielstudios,” *Radio und Fernsehen* 5 (1955): 204–7.

Looking at the whole complex of the Funkhaus, one can trace the path that sound—the raw material—follows within the building as it is transformed from the realm of mechanics into media content broadcast through electromagnetic waves, almost as in a “production line”: From a bus terminal in Block D covered by twelve concrete half vaults, receiving daily over five thousand employees; to the recording rooms in Block B, where a wide, massive staircase is finished in raw concrete, carpet, and wood (leading nowhere, its sole purpose being to serve as a resonating device for recording footsteps under different acoustic conditions);^{fig. 10} or to the studio next door, where all the flooring is exchangeable, giving access to a wide set of materials to, again, mimic or craft sounds; then to the Grosser Sendesaal, where the sound waves bounce off the geometric patterns of the internal surfaces of the room before reaching the newly engineered Neumann microphones, which are capable of perceiving those waves with great precision; or through wires to the control and listening rooms where the tape machines are located, followed by the mixing board and mastering studios; and finally to the transmission station, an entirely different typology operating with large diesel engines, heavy machinery, and a 250-meter-tall tower, which transforms electric impulses into radio-electromagnetic waves, delivering them to domestic radio receivers and speakers, and through those to the ears of the inhabitants of East and West Germany and, in some cases, even to the entire planet.

Architectural floor plan of the Musiktheater Bonn, showing the orchestra pit and stage layout. The plan includes labels for various sections: Schlagwerk (Percussion), Trompete (Trumpet), Posaune (Trumpet), 2. KL. (2nd Clarinet), 2 Flg. (2nd Flute), 2 FL. (2nd Flute), 2 Ob. (2nd Oboe), 4 Hörner (4 Horns), 2 Violinen (2 Violins), 1 Violinen (1 Violin), Bratschen (Violas), Celli (Cellists), and Bässe (Basses). The pit is divided into three sections with widths of 2m, 3m, and 3.5m. The stage is marked with dimensions 9, 10, and 11. The plan is numbered 7 and 8.

The architecture of the Funkhaus helps us to reframe the question of the wall within the “environmental history of the war against information.”³⁷ The Funkhaus contains different types of walls, and they perform at various levels. On the one hand, they divide, they create heterogeneity through fragmentation, and they allow the simultaneous coexistence of adjacent singularities through a calibrated balancing of hermetic seals and permeability. On the other hand, the inner surfaces of the walls are constantly vibrating; they reflect and then radiate every sonic impulse that has been emitted, being the very medium that blends sonic and spatial qualities into electric signals. This twofold performance of the walls within the Funkhaus is achieved through their geometric disposition and material constitution. They mechanically perform a function equivalent to the one attributed to the Subharchord synthesizer utilized by Rzewski for his piece “Zoologischer Garten”: to fabricate sounds that do not exist otherwise. One using a mechanical and the other an electric sonic impulse, both “machines” inscribe spatial qualities to sounds, or what acousticians refer

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37 Lothar Kiebs, "Perspektiven für eine raumbezogene Rundfunkübertragung," *Technische Mitteilungen aus dem BRF 1* (March 1960): 2–20.

38 Gerhard Steinke and Dieter Boeck, "Die Musikwerkstatt," radio program, recorded at the Funkhaus in Saal III, November 6, 1964, in AdK, AVM-31 0801.1-2. Translation by the author.

fig. 10 Staircase in Block B finished in carpet, wood, and concrete.

to as *Raumeindruck* (spatial impression) — usually understood as the spatial sensation in sound but combining the separate words *Raum* (space) and *Druck* (pressure) and also carrying the meaning of imprinting space into sounds. 38

In 1964, sound engineer Gerhard Steinke explained the technical and aesthetic capacities of the recently completed Funkhaus during the radio program "Die Musikwerkstatt." When asked about the main potential of his research in the Labor für akustisch-musikalische Grenzprobleme, he was clear: "what we want to do is to broadcast the space. And it is not that you will be in the concert room, but you will feel, that behind that wall, that loudspeaker-wall, there is the room." 39 Through its walls the Funkhaus created spaces to be recorded and transmitted across Berlin, defining the very spatiality of the city by entering and perforating the domestic and working areas of its inhabitants. The Funkhaus thus appears as a material manifestation of the apparently immaterial transgression that radio waves performed in and across Berlin. By analyzing this transgression, we can begin to understand not only the important role that architects played in the design of those constructions but also the nature

of an *architecture of radio*; that is, radio itself as architecture. This architecture is understood as a system of relations, a tectonic arrangement woven across different institutions, scales, and technologies. Conceiving architecture in this way implies looking at elements such as windows, doors, walls, and columns in relation to electronic media devices such as tape recorders, mixing boards, vacuum tubes, transistors, and microphones; analyzing the internal organization of building types and how they relate to these elements; and understanding their disposition and location within the structure of the city. The *architecture of radio* is not a top-down project designed by any specific architect, planner, or political agent alone. Rather, it is a technological ensemble constructed by electronic and mechanical elements, building types, and ultimately by urban structures making indissoluble the relationship between these three scales of operation.



The political agency of this form of architecture depends on how it transgresses, redefines, and redistributes limits and thresholds that have been traditionally understood as stable and solid. Rather than being an obedient and monumental form of construction — onto which stable political constructs are applied — the *architecture of radio* is a medium through which questions of power and ideology must be defined and redefined, negotiated, and calibrated. It redistributes and destabilizes the order of the *polis* and thus has political power, but one that neither East nor West fully controlled or could fully align with. Architecture, to be sure, is always political, but the politics of architecture do not necessarily coincide with the politics of those who conceive it. In the argument constructed here, the walls of Berlin once operated as both: as the sensors upon which the *architecture of radio* left its traces, and as the very agents through which this form of architecture effectively performed. Thus, Berlin and its walls seem to be the perfect ruin from which to understand and learn how to “deal with a strange” — and intrinsically architectural — “way in which human beings render their world inhabitable by circumscribing and forgetting about those parts of it that offend them.” 40

39 Evans, “Rights of Retreat” (see note 1), 335.

Under Siege: Transforming Sarajevo's Built Environment Asja Mandić

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1 By the end of May 1992, the Yugoslav People's Army had renamed itself the Army of the Serbian Republic of Bosnia and Herzegovina.


2 Miroslav Prstojević, Maja Razović, and Aleksandra Wagner, *Sarajevo Survival Guide* (Sarajevo: FAMA, 1993), 1.

One of the most valuable documents on how to survive in the besieged city of Sarajevo (1992–1996) during the war in Bosnia and Herzegovina is *Sarajevo Survival Guide*, written during the first two years of the siege, when military forces of Bosnian Serbs, assisted by the heavily armed Yugoslav People's Army ¹ and Serbian and Montenegrin paramilitary troops, took control of the mountains and hills surrounding Sarajevo. Based on collected records, interviews, and recommendations, the guide "intends to be a version of Michelin, taking visitors throughout the city and instructing them on how to survive without transportation, hotels, taxis, telephones, food, shops, heating, water, information, electricity." ² The guide was later accompanied by a *Survival Map 1992–1996*, a hand-drawn map based on documents and photographs taken during the war, including the positions of weaponry around Sarajevo taken from the original Yugoslav People's Army map. ^{fig.1} The hand-drawn map, consisting of a legend, enlarged map sections, and text description for fifty-seven highlighted sites, provides a visual document of the siege and survival possibilities, including types of weaponry encircling the city; damaged buildings of social and historical significance; red circles to mark the most dangerous zones, those exposed to constant shelling and sniper fire (e.g., bridges and crossroads open toward the hills); sniper protection walls and barriers; water sources; war gardens; and people running on the crossroads or carrying water canisters or wood. By looking at the map, one can see there were no safe zones in Sarajevo. Every place was subjected to gaze and destruction.

During the siege, Sarajevo was completely encircled and subjected to carefully orchestrated destruction. The city's geography and topography made it susceptible to military blockade and assault but also to more discreet techniques of control. The mountains and hills surrounding the city and its 350,000 inhabitants ³ became sites for the concentration of military forces and their heavy artillery, tanks, and sniper rifles. With the siege, the city was completely immobilized and isolated. All points of entry and exit were blocked. Sarajevo soon became a highly controlled zone where life was reduced to bare existence and survival. Sarajevans were exposed to constant threat, danger, surveillance, control, and fear in their built environment. The gaze of the enemy was felt everywhere. Snipers scanned streets, buildings, houses, courtyards, bridges, and crossroads. The enemy's gaze was particularly felt in parts of the city near Grbavica,

3 The estimate of 350,000 besieged residents takes into consideration the last Yugoslav census of 1991, according to which 361,179 people lived in Sarajevo, as well as the fact that significant numbers left the city in the first months of war. See Vahid Karavelić, "Teroriziranje Sarajeva 1992–1995. godine," in *Politički i vojni značaj odbrane Sarajeva 1992–1995*, ed. Mesud Šadinlija (Sarajevo: Institut za istraživanje zločina protiv čovječnosti i međunarodnog prava Univerziteta u Sarajevu, 2014), 343–72, here 350.

a residential area located on the west bank of the Miljacka River which was occupied and completely cut off from the rest of the town. Throughout the siege, Grbavica was a sniper's nest in the heart of Sarajevo, and areas paralleling it were continually attacked. The main streets connecting the municipality of Novo Sarajevo to the center of the city became known as "sniper alley."

In less than two years of the assault on Sarajevo, the totality of its urban tissue — from commercial and industrial facilities to housing units and residential areas, including cultural and educational institutions, houses of worship, schools, hospitals, cemeteries, and the monuments and cultural heritage attesting to the city's rich cultural, ethnic, and religious diversity — was systematically targeted, damaged, and in many cases destroyed. ⁴ This deliberate urbicide is carefully documented in *Warchitecture: Sarajevo Urbicide*, a dossier of photographs and maps of damage. Created by the Bosnia-Herzegovina Association of Architects (DAS-SABIH) in Sarajevo, the publication surveys buildings damaged or destroyed from May 1992 through October 1993. ⁵ Divided into four sections, corresponding to periods of the city's development, the publication provides brief historical information and describes the degree of devastation of individual buildings with the spatial precision of a plan.  ^{fig.2} By the end of 1993, Sarajevo was a ruin, literally and metaphorically.

The siege was also a war on infrastructure directed at the very nature of the modern city and its citizens, especially the most vulnerable members of the population — the old, the weak, and the ill. ⁶ The strategic paralysis of Sarajevo included the disruption or destruction of systems that sustained the city: the power grids, water network, sewage and waste disposal systems, as well as transportation and communication infrastructure and food supplies. In fact, during the first months of war, supplies of electricity, water, and gas were all cut off, the public transportation system was destroyed, and most telephone service was disrupted when the Main Post Office Building was burned. ⁷ Soon the city was devoid of fuel, food, and medicine.

⁴ On the destruction of the city, see Association of Architects of Bosnia-Herzegovina, "WARCHITECTURE," *ARH: Magazine for Architecture, Town Planning and Design* 24 (1993).

⁵ In the early 1990s, in response to the destruction of Mostar, Sarajevo, and the Croatian cities of Vukovar, Zadar, and Dubrovnik, Bogdan Bogdanović, a Serbian and Yugoslav architect and theorist, wrote about "the ritual murder of the city." See Bogdan Bogdanović, *Tri ratne knjige* (Novi Sad: Mediterran Publishing, 2008), 35–39. The term *urbicide* was then adopted by architects in Bosnia and Herzegovina to describe violence in Sarajevo and Mostar. See *Warchitecture: Sarajevo Urbicide* (Sarajevo: DAS-SABIH, 1994); and *Mostar '92: Urbicide* (Mostar: HVO općine Mostar, 1992). The term is also used in connection to the wars in Bosnia and Herzegovina by Martin Shaw and Martin Coward. Shaw, a sociologist of war, sees urbicide as a form of genocide. Martin Shaw, "New Wars of the City: Relationships of 'Urbicide' and 'Genocide,'" in *Cities, War, and Terrorism Towards an Urban Geopolitics*, ed. Stephen Graham (Malden, MA: Blackwell Publishing, 2004), 141–54. For more information on urbicide in Sarajevo, see also Martin Coward, "Urbicide in Bosnia," in *ibid.*, 154–72.

⁶ See Stephen Graham's analysis of the importance of infrastructure for the functioning of modern cities. Stephen Graham, "Disruption by Design: Urban Infrastructure and Political Violence," in *Disrupted Cities: When Infrastructure Fails*, ed. Graham (New York: Routledge, 2010), 111–29, here 111.

⁷ Suada Kapić, *The Siege of Sarajevo 1992–1996* (Sarajevo: FAMA, 2000), 22.

fig.1 Survival Map 1992–1996, "The Siege of Sarajevo."
→ 86/87



rajevo

1994 1995



The markets were empty, stores vacant. With the complete blockage of the city's arteries, everyday life was transformed into a struggle against darkness, cold, hunger, immobility, and disease, as well as the fear of violence and crime. ⁸ How did Sarajevo's inhabitants survive under these conditions? How did they adopt their living environments to fulfill their most basic needs? How did life continue in the besieged city?

⁸ Graham, "Disruption by Design" (see note 6). Looting and crime occurred in Sarajevo from the beginning of the siege. See "Survival Questionnaires," in Kapić, *Siege of Sarajevo* (see note 7), 836–1029.

Survival in an Annihilated Urban Environment

The defenselessness of Sarajevo, the hardship and privation of its citizens, as well as the insufficiency of arms and ammunition prompted the Army of the Republic of Bosnia and Herzegovina to look for an underground connection to break the complete isolation of Sarajevo. From March to December 1993, the army built a tunnel underneath the airport runway. Objekat

fig. 2 A leaf from *Warchitecture: Sarajevo Urbicide*.

⁹ See Mesud Šadinlija, "Izgradnja i značaj sarajevskog ratnog tunela," *Korak*, no. 30 (2013): 23–37.

D-B, also known as the "Tunnel of Hope," was primarily used for military purposes, including the transportation of munitions and military units to the war zones outside the city, especially in the Igman and Bjelašnica mountains. ⁹ The tunnel was also used for civilian purposes, but only for those with special permission (wounded civilians, political delegations, cultural workers, journalists, etc.), and it served as a channel for supplies of food and electricity, as well as for smuggling. The tunnel, however, did not ease the hardship of civilians, since the food and fuel transported through it were insufficient and sold for immense amounts of money. ¹⁰ The struggle for survival continued for the next two years.

Open spaces, especially in public areas and on the streets, represented life threats to those present in them. The crowds of civilians searching for food, water, and alternative solutions to overcoming the cold were particularly at risk of attack. The most horrific civilian massacres during the siege took place on Ferhadija Street and in the open market, Markale, as people stood in line for the trucks distributing bread or gathered at the deserted market searching for food. ¹¹ Even children were targeted while playing

¹⁰ Vildana Selimbegović, "Objekat D-B: Tunel na kraju svijeta," *Bosanskohercegovački dani*, April 1996; "Sjećali se Sarajeva?" *Nezavisni news magazin* (special edition), April 5, 2002, 30–34.

¹¹ See Merisa Karović Babić, *Masovna ubistva civila u Sarajevu za vrijeme opsade 1992–1995* (Sarajevo: Institut za istraživanje zločina protiv čovječnosti i međunarodnog prava Univerziteta u Sarajevu, 2014), 144, 209–10.



in front of their houses, buildings, and courtyards.¹² These threats and attacks brought forth new uses of public spaces and new ways of moving through them. Sarajevans learned to complete tasks, whether going to work, getting water and food, or visiting family and friends, as quickly as possible. The practice of walking through the city was replaced by running over bridges, through squares, and across crossroads, since the widest intersections, as the *Survival Map* shows, were often the most exposed to the gaze of the enemy and were therefore continually attacked. The reality of imposed war resulted in a completely new relationship to and perception of the built environment, its qualities, and its uses. What are normally considered to be great assets in cities — open, green, and public spaces — become inimical to life in modern warfare. Bridges that once connected people, communities, and neighborhoods now exposed Sarajevans to the gaze of the sniper. Spaces for socializing and recreation, such as parks and green areas, were transformed into graveyards and potential sources of food and heating alternatives.

These conditions gave birth to a network of hastily constructed barricades and barriers across streets, preventing the movement of the enemy as well as limiting the gaze of the sniper. The Bosnian army erected a defense system on the lines of demarcation, while civil defense, with the assistance of United Nations (UN) troops, constructed walls of containers, vehicles, and remnants of destruction on the major crossroads.¹³ Bombed-out, overturned cars, trams, and buses served as unintended shelters, and even moving UN armored vehicles were used as shields. Various forms of improvised fields of fortification and obstruction — from sandbag barriers to medical cabinets and even clothing and sheets — provided protection, or the illusion of it.

The Role of Interior Living Spaces¹⁴

Those residential buildings not ruined were damaged, and consequently houses and apartment buildings became monuments of both destruction and survival. Walls pockmarked by bullets or dented by grenades, the holes of burned-out apartments, detonation-shattered windows covered with plastic or cardboard boxes, doors or closets, even mattresses or books,¹⁵ as well as old stove flues sticking out from windows, forced the inhabitants to develop different modes of living. Housing units played an important role within this built environment under siege by instigating new relationships between interior and exterior spaces and inciting the reorganization of the former. Every household in Sarajevo was affected. Basic human needs, including sleeping and eating, took place in completely different ways. Spaces for living and sleeping

¹² Zilha Mastalić-Košuta, "Masovna ubistva djece u Sarajevu pod opsadom 1992–1995," in *Politički i vojni značaj odbrane Sarajeva 1992–1995* (see note 3), 578–601, here 592–94.

¹³ Robert J. Donia, *Sarajevo: A Biography* (Ann Arbor: University of Michigan Press, 2006), 305–6.

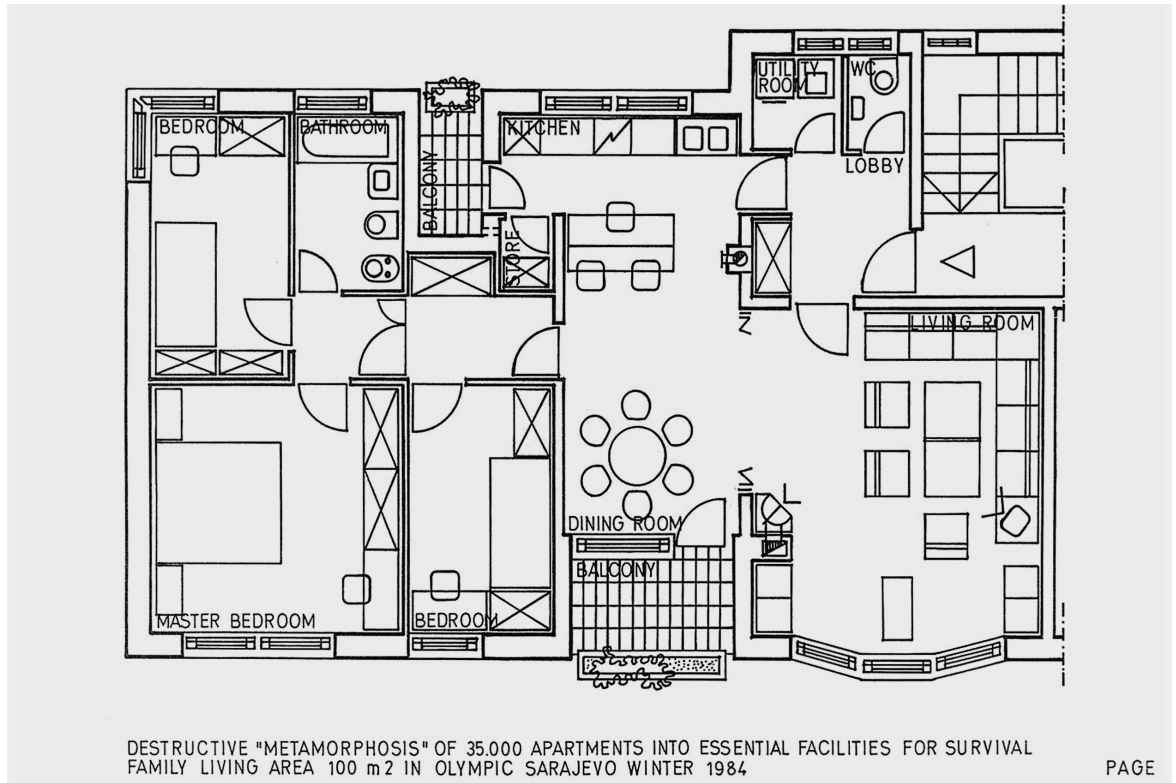
¹⁴ Unless stated otherwise, the information presented in this section is based on the author's lived experience and the testimonials of her friends and family members who lived through the siege.

¹⁵ Prstojević, Razović, and Wagner, *Sarajevo Survival Guide* (see note 2), 11.

moved to the somewhat protected areas, often to the hallways, which became a multifunctional space used for cooking, dining, sleeping, reading, conversation, and study. Particularly housing units in multistory buildings were modified, transformed, and adapted to satisfy basic human needs.

A paramount example of these transformations is illustrated in two drawings by Sarajevo architect Zoran Doršner, who lived and worked in the city throughout the siege. In them a modern three-bedroom apartment floor plan is juxtaposed to its modified state as a half-destroyed shelter adjusted for down-to-earth

figs. 3 a–b Zoran Doršner, "Destructive Metamorphosis of Sarajevo Concentration Camp, 1992, 1993, 1994...1995?" Floor plan, 1994.



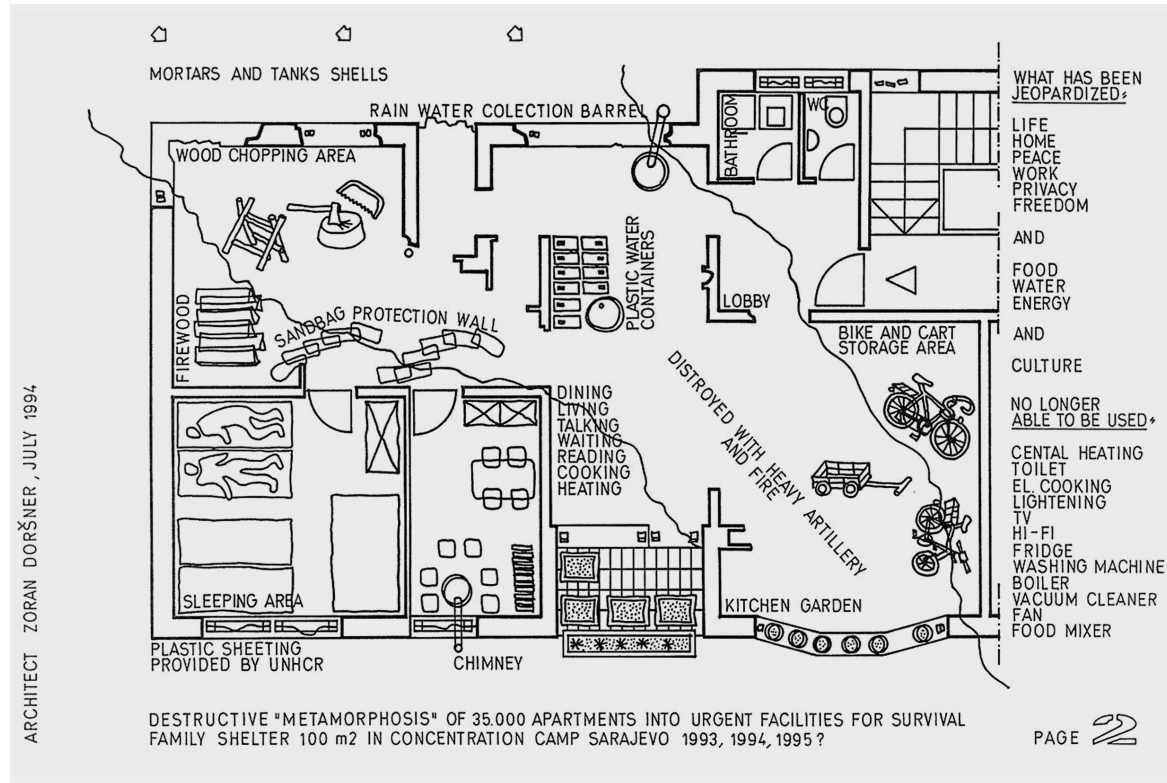
survival. The transformed interior includes survival elements such as sandbag wall protection, firewood, canisters, and empty window sockets, reflecting the people's endurance and adaptive abilities. **figs. 3 a–b** The drawings reveal a new functional disposition of rooms – the result of the infrastructural paralysis and destruction of the largest functional space (consisting of kitchen, dining room, and living room). The small bedroom has been turned into a multipurpose room where a wood stove, with flue sticking out the window, has been installed for cooking and heating. Doršner's drawings, along with his text describing the metamorphosis of apartments into "facilities for survival," was published in the Sarajevo daily newspaper *Oslobođenje* in 1994. He writes,

"The largest, functional, apartment space is used for parking bicycles and carts as the main means of transportation of food, water, and wood, whereas the other part of that space is used for chopping and sawing the wood brought from the nearby parks. The technical water used for sanitary facilities and washing

was collected from the gutter along the eaves that catches rain-water and collected in plastic canisters. In the summertime the open space of the loggia was used for planting vegetables in concrete and wooden crates and large plastic bags." ¹⁶

Lacking electricity, gas, running water, and food, the kitchen spaces in Sarajevo households often did not function as places where food was kept, prepared, or cooked or where dishes were washed. Electrical stoves were replaced with various types of wood stove, often handmade and improvised from found materials. Cooking areas were frequently moved to a balcony. With the

¹⁶ Zoran Doršner, "Kad gradove ubijaju," *Oslobodjenje*, December 10, 1994, 7. Translation by the author.



shortage of wood and coal, people were forced to use whatever they could find in their living space. Furniture, books, shoes, cardboard packaging from humanitarian aid, even plastic bags were turned into combustibles. ¹⁷ Forced into down-to-earth survival, Sarajevo's citizens designed necessary items from whatever was available; for example, barbeque pots, stoves made from metal medical cabinets, sewage pipes, or cans; push carts made from crates, tables, and sleds; and the *kandilo*, a lamp made from oil and water. ¹⁸

¹⁷ Prstojević, Razović, and Wagner, *Sarajevo Survival Guide* (see note 2).

Modern apartments, with lighter and more flexible spaces and horizontal window openings with large glass surfaces, needed more spatial intervention and reorganization, since the large window openings made them difficult to heat and reduced protection from sniper bullets and grenade shrapnel. The hardships of adapting apartments to the new urban war condition were particularly felt in high-rise buildings with nonfunctional elevators and lacking chimneys, basements, and green areas, although

¹⁸ Jelena Mrkić, "Sarajevski ratni izumi: Umijeće stvaranja," *Bosanskohercegovački dani*, November 1994, 93–94.

fig. 4 War Garden, Sarajevo, 1992–95.

flat roofs provided ideal surfaces for planting vegetables. Consequently, survival in multistory apartment buildings gave rise to new uses of spaces inside and outside of the buildings. Common areas and basements were given new functions. Staircases and main entrances became thresholds and were used for provisional protection and communal gathering, enabling social encounters with neighbors and casual passersby who required temporary shelter from shelling.

Shelters played a special role in the creation of new spaces for social life. Due to the frequent shelling, residents moved underground to shelters, basements, and cellars, where various activities took place: schooling, play, communication, and social integration. Common building areas fluctuated between inside and outside, between private space and common space: schools were organized in the hallways and stairways of apartment buildings, as well as in basements, shelters, and utility rooms, all of which might serve variously as children's play areas, as gathering spots where neighbors could communicate and exchange food, water, and war recipes, or as improvised communal cooking areas. ¹⁹ The apartment blocks in the modernist housing projects that had been built in the new parts of the city (after the Second World War), once known for "weak sociability," ²⁰ for containing individuals and families within the walls of their homes, now became centers of community life. In addition, the spaces between buildings were used for various functions, including planting vegetables, playgrounds, and common cooking areas. ²¹/fig. 4 The closer proximity of buildings in the apartment blocks provided protection from the sniper, although not from mortar shells, so it was not physical security but more of a psychological sense of security that allowed these spaces to take on a new role of fostering interaction among residents.



¹⁹ Staircases were often used as shelter in apartment buildings that did not have basements. Children often played in these transitional spaces. See, for example, David Berman, "The War Schools of Dobrinja: Schooling under Siege in Sarajevo Community," *The Carl Beck Papers in Russian and East European Studies*, no. 1,705 (2005): 1–63.

²⁰ See Rajka Mandić, "The Architecture of Syncretism: Culture as Context in Housing," in *Rethinking Globalism: Case of Transforming Old Cities*, ed. Sengul Oymen Gur (Saarbrücken: Lambert Academic Publishing, 2010), 93–119, here 97–107.

²¹ In his war journal, Dane Olbina wrote about common cooking areas. See Dane Olbina, *Dani i godine opsade* (Sarajevo: J. U. Istorijski arhiv Sarajevo, 2002), 81.

"Watch Out, Sniper!"

The wall barriers, barricades, and boundaries that were installed on the crossroads and in the areas exposed to permanent sniper fire throughout Sarajevo offered opportunities for expressions of resentment and for rebellion against oppression. These surfaces allowed people to communicate directly with passersby and to attempt to help one another. The surfaces of barriers and facades were used as canvases or signboards for various forms of graffiti and text messages, including antiwar mottos ("I Want Freedom!" "Peace!"), anarchist slogans, messages of despair ("Welcome to Hell!"), and warnings and information signs ("Watch Out, Sniper!" "Shelter!"). ^{fig. 5} Such textual signs also offered social commentaries on the situation and conditions in the besieged city and drew meaning from references to physical locations, as well as the totality of Sarajevo. Inscriptions on buildings, walls, boards, street fur-



fig. 5 *Skloniste* ("shelter"), *Upadaj* ("get in"), Sarajevo, 1994.

niture, and even on pieces of textile nailed to a tree, represented the new city signage and street markings. These small moments, ruptures in the visual scenario of Sarajevo, had a social impact and can be perceived as ways of reclaiming the city.

In the context of opposition to collective modes of oppression and protection of urban ways of life, cultural resistance played a significant role in besieged Sarajevo. The city experienced a cultural revival, including an intense program of film screenings, theater, opera, and ballet performances, as well as the organization of about one hundred solo art exhibitions, a dozen group shows, and around one hundred concerts in various locations. ²² Cultural workers and artists working with rubble, debris,

²² Asja Mandić, "Formation of a Culture of Critical Resistance in Sarajevo: Exhibitions in/on Ruins," *Third Text* 25, no. 6 (2011): 725–35, here 726.



and various fragments of destruction used a wide variety of spaces, from open public space to damaged cultural institutions and ruins, such as the Public National Library ^{fig.6} and Sutjeska cinema. These momentary interruptions, infiltrations, appropriations, and spatial interventions fostered social interaction, participation, and engagement in public spaces under siege. Instead of avoiding spaces of potential risk, people consciously risked their lives to attend cultural events, hence contesting and challenging mechanisms of power and control and the degradation and dehumanization they impose.

fig.6 Vedran Smajlović, concert in the National Library, Sarajevo, 1993.

Drawing from the Jawlan

Nora Akawi

On May 15, 2011, on the commemoration of the Nakba, and as part of a mass movement calling for freedom, justice, and the toppling of colonial and oppressive regimes in the Arab region, thousands marched in nonviolent protest toward the trenches and barbed wire in Majdal Shams' Valley of Tears, which separates the occupied Golan Heights from the rest of Syria. Protesters were primarily Palestinian and Syrian refugee youth whose families had been forcibly displaced from their land by the systematic ethnic cleansing that accompanied the creation of the Israeli state in 1948 and by its continued colonial expansion, including the occupation of the Jawlan (Golan in Arabic) in 1967. Marches of return were organized simultaneously toward the borders with Lebanon, Egypt, and Jordan, and in various towns and cities in Palestine. The Jawlanis' and Palestinians' refusal of these borders, and with it the implicit challenging of the maps that inscribe them, was performed in a choreography of collective resistance.

"Drawing from the Jawlan" is a project dedicated to producing geopolitical maps and architectural drawings that are aligned with indigenous Jawlani narratives and with their practices of refusal of settler-colonial exploitation of the land and its people. The project, part of the larger "Mapping Borderlands" initiative begun by Nora Akawi and Nina Kolowratnik in 2014, is a pedagogical experiment at Columbia

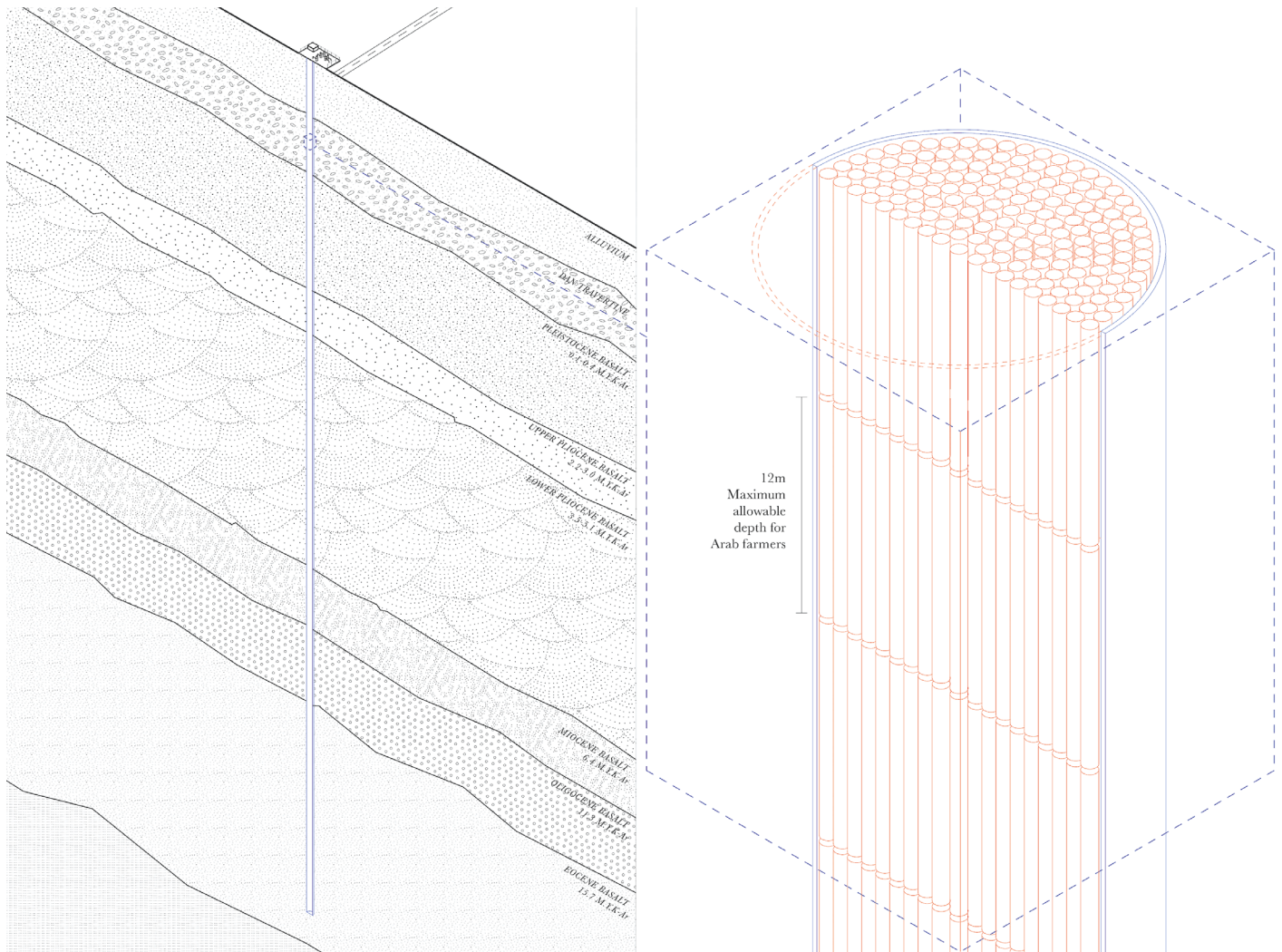
University's Graduate School of Architecture, Planning and Preservation (GSAPP) taught by Akawi and Khaled Malas, in partnership with Aamer Ibraheem. The project matches the skill sets of students of architecture (who redraw maps of the Jawlan) with organizations and groups working toward a new imaginary of territorialities, one that fights the static and exclusive nature of the state system. The project takes as a starting point the problematization of our understanding of territoriality, which is still heavily rooted in our imagination of the world as divided into compartmentalized, distinct, and mutually exclusive political formations. Following Arjun Appadurai's proposal to shift the emphasis from "trait geographies" to "process geographies," "Drawing from the Jawlan" aims to visualize movement and its suspension, both regular and irregular, recognized and unrecognized, as the central elements that define contemporary territories and geopolitical formations. The hope is that through critical analysis and representation — not of static conditions but of processes both of building and dismantling fortifications — other imaginaries for shared terrains can emerge.

Al-Marsad — Arab Center for Human Rights in Golan Heights has been leading the colossal effort to redraw maps of the Jawlan by locating and retracing the narratives of over one hundred fifty razed towns and villages, over hundred destroyed farms, and around 130,000 people expelled in 1967 (95 percent of the population at the time), as well as

by organizing for the rights of those still defiantly present in the few remaining towns. Learning from and in alliance with Al-Marsad, the course organizes readings, writings, and drawings around four core notions: edges and borders, ruins and excavations, resources and extractions, and images and imaginaries. Students explore each notion primarily through writings, films, and images produced by artists, writers, and researchers from the Jawlan, with relevant theoretical texts complimenting these works. During the first quarter of the course, participants develop a focused area of study, then travel to the Jawlan to meet with inhabitants of the area and authors of the studied works to evaluate with them the relevance of their writing and drawing proposals. The remaining time in the semester is dedicated to developing the mapping projects. The projects build on the course readings, on-site drawing and documentation, statistical data, satellite imagery, and photographic and other image and text-based archives. They trace the exploitation of subterranean resources, agricultural produce, and archaeological remains as tools for colonization, as well as the persistent civic resistance against it. Projects identify images from the 1960s and 1970s in the archive of the Israeli military and, by adding to these documents the layers they omit and geolocating and redrawing the scenarios they depict in today's contexts, repurpose them to build a new archive that joins the testimonies to the massive erasure and expropriation of

Syrian lands, peoples, and histories. The following three mapping projects illustrate the purpose and objective of the experiment.

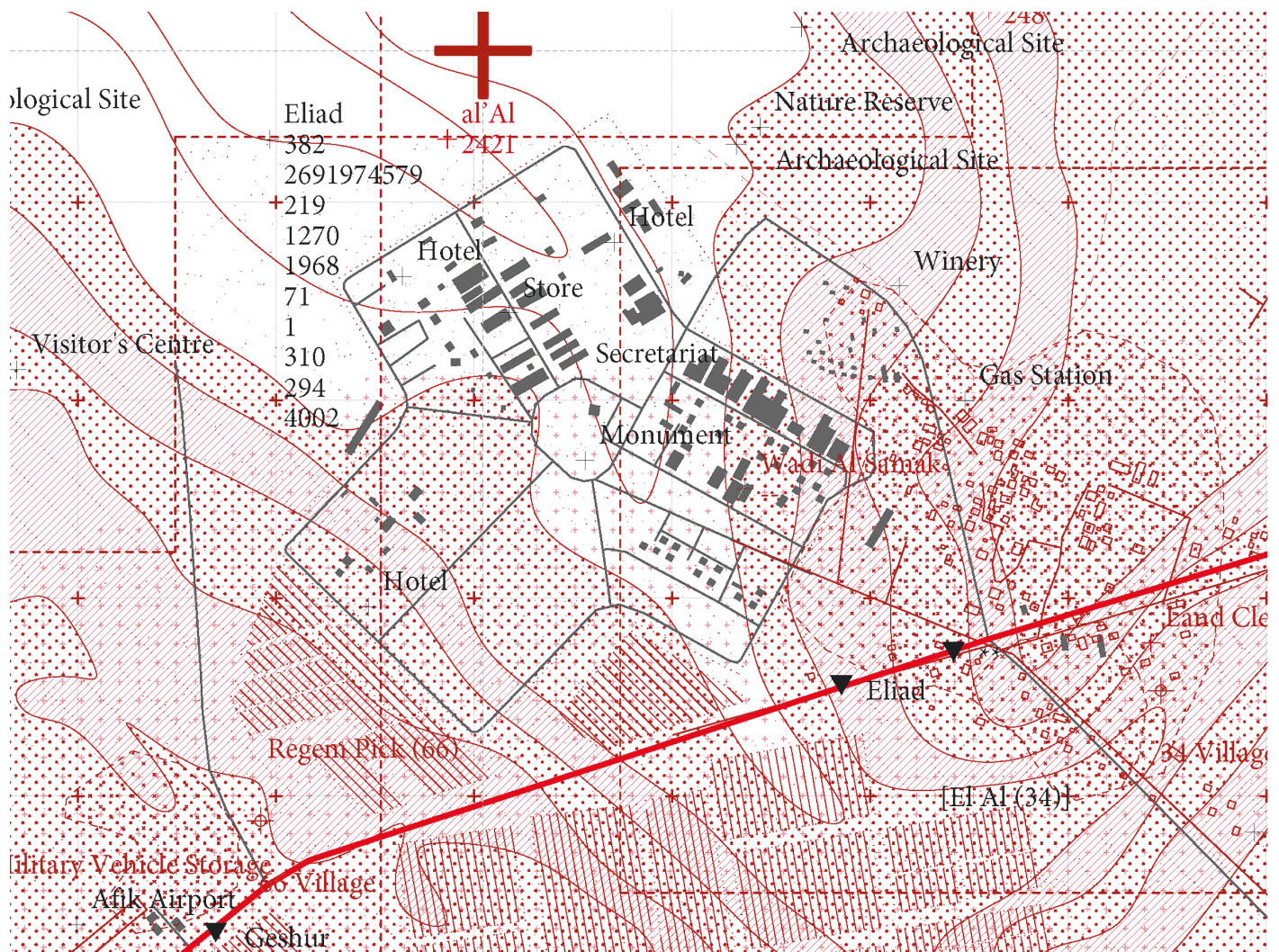
Xiao Wei Lim gathers geological maps, corporate advertisements for Israeli water companies, Arab farmers' narratives, and on-site research to visualize and compare the differences in the provision of water infrastructure and access between Israeli settlers and



indigenous inhabitants. The maps draw together layers of information that are typically not combined (remaining Syrian villages, Israeli settlements, potable water pipelines, wells, and other water infrastructure), visualizing the research and comparing the distribution of resources between Israeli settlers

and Syrian inhabitants. To make up for water shortages and the tendency of state infrastructures to bypass them, Syrian farmers began forming cooperatives to connect their lands to sources of water, including the building of rainwater collection tanks (many of which were regulated by the Israeli military and often fined, perforated by bullets, or completely destroyed). Learning from the work of environmental researcher and activist Muna Dajani and other experts on water in the region, Xiao Wei Lim redraws the map of the Jawlan to reveal the discriminatory patterns of water provision to Syrian farmers, in juxtaposition to Israel's large-scale extraction and subsidy of water for settlement expansion and large-scale corporate production and export.

Alicia French analyzes, locates, and catalogs the designed obstruction of the traces of colonial violence, showing how the terrain has been reconstructed to obscure unwanted narratives, both in the digital realm and physically on the ground. Digital obstructions include actual cut-outs from images of destroyed villages, the planting of trees over ruins, which render them invisible in satellite and aerial imagery, dead links and removed websites, the omission of certain places from official maps, and so on. With over two hundred fifty destroyed farms and villages scattered across the landscape, physical obstructions such as fences, minefields, newly planted forests, artificial topographies, and so on are designed to direct visitors away from their traces. The resulting maps,



drew a set of maps formatted as a printed road atlas but including layers typically invisible to travelers; for example, the names and locations of erased villages are juxtaposed with the names given to the Israeli settlements and tourist attractions built in their stead; plot divisions of farms destroyed since 1967 are traced through aerial imagery. Still under development, the atlas is designed to be an alternative travel guide and road map for the area.

Together, the mapping and drawing experiments form a gesture toward visual languages that can represent the ways in which the colonization of the Golan Heights has been performed through the violent removal of its original inhabitants and

the destruction of their built environments, as well as the ways in which even subtle manipulations of the land have become participants in the ongoing colonial project. The hope is that this continued experimentation can contribute maps that are drawn not to exercise control but that overlay contradictory fragments, haunting memories, and incomplete narratives. More important, the hope is to contribute to the proliferation of future maps of the Jawlan that are drawn from the memories and imaginaries of its people, and that together these will one day outnumber and render irrelevant the ones drawn to repress them.

fig. 1/fig. 2/fig. 3 Drawings by Xiao Wei Lim, Alicia French, and Stephan van Eeden for Drawing from the Jawlan seminar, Columbia GSAPP, Fall 2017.

Ismae'l Sheikh Hassan

is an urbanist and activist who works on Palestinian refugee camps across the Middle East and reconstruction projects in Lebanon.

Note: This article is based on the author's PhD dissertation: "On Urbanism and Activism in Palestinian Refugee Camps" (KULeuven, 2015). The author was involved in various activist and grass-roots initiatives in Nahr el-Bared during the destruction/reconstruction of the camp, as well as in formulating the urban design of the camp's master plan.

1 On Fateh El-Islam, see, for example, Fida Itani, *Jihadists in Lebanon: From the Forces of Dawn to Fateh El-Islam* [in Arabic] (Beirut: Al-Saqi, 2008); Ismael Sheikh Hassan and Sari Hanafi, "(In)Security and Reconstruction in Post-conflict Nahr Al-Barid Refugee Camp," *Journal of Palestine Studies* 40, no. 1 (2010): 27–48.

2 "Lebanon: Investigate Army Shooting of Palestinian Demonstrators: Government Must Prevent Further Anti-Palestinian Violence," Human Rights Watch, July 3, 2007, <https://www.hrw.org/news/2007/07/03/lebanon-investigate-army-shooting-palestinian-demonstrators> (accessed August 2, 2018).

3 Adam Ramadan, "Spatialising the Refugee Camp," *Transactions of the Institute of British Geographers* 38, no. 1 (2013): 65–77, here 72; Are Knudsen, "(In) Security in a Space of Exception," in *Security and Development*, eds. John-Andrew McNeish and Jon Harald Sande Lie (New York: Berghahn, 2010), 99–112, here 101.

4 Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life*, trans. Daniel Heller-Roazen (Stanford, CA: Stanford University Press, 1998); Giorgio Agamben, *State of Exception*, trans. Kevin Attell (Chicago: University of Chicago Press, 2005); Jef Huysmans, "The Jargon of Exception — On Schmitt, Agamben and the Absence of Political Society," *International Political Sociology* 2, no. 2 (2008): 165–83.

Reconstructing Nahr el-Bared: Design and Activism in Extraordinary Conditions Ismae'l Sheikh Hassan

In 2007, Nahr el-Bared was totally destroyed. This Palestinian camp, which housed 30,000 refugees within its 70-year-old urban fabric, was the site of a battle between the Lebanese army and Fateh El-Islam, an Islamist militia that had arrived in Nahr el-Bared just a few months prior to the outbreak of the battle. ¹ Thus, the second-largest Palestinian camp in Lebanon, which was also the most important urban and economic center for the rural region of Akkar in the north of the country, was totally destroyed in a matter of three months. ^{fig.1} However, no public inquiry or investigation was conducted to determine which regional or local actors in Lebanon should bear responsibility for the arrival of Fateh El-Islam in the area. The Nahr el-Bared refugees were blamed for the battle and its consequences, despite their opposition to Fateh El-Islam and support for the Lebanese army during the battle. When a peaceful demonstration by camp residents demanded that the camp not be destroyed in the army's battle against the militia, the Lebanese military opened fire on the demonstrators, killing two refugees and injuring dozens. ² After the battle, the camp remained a no-access military zone, and the camp's urban extensions were looted and burned. Because the army was able to commit such acts with no political or legal consequences, several academics consider the destruction of Nahr el-Bared as the manifestation of a state of exception; ³ that is, a condition in which the rule of law has been suspended. ⁴

Since 2007, many local civil campaigns and social mobilizations have engaged in activities aimed at rebuilding the camp, restarting its economic role, and recovering its social life. Various activist-professionals and, particularly, activist-urbanists have engaged in these initiatives, playing significant roles in developing the refugees' vision for reconstruction. Camp life, however, despite many gains, did not return to prewar normality due to problems in funding the reconstruction and due to new and strict military controls put in place after the war, such as

checkpoints, perimeter fences, and military governance. Today the camp remains only half rebuilt.

Nahr el-Bared is an interesting case for reflecting on the roles, potentials, and limits of design activism in extraordinary conditions such as camps, wars, and civil crises. Both Nahr el-Bared's activists and Lebanese state institutions used architecture and urban design as a tool for envisioning and advocating a new reality in the aftermath of the war. However, writing about the reconstruction is not a straightforward task, as accounts that assess the process are conflicting. On the one hand, given the intensive forms



fig.1 Aerial view of the destruction of the camp taken during the war in 2007.

of local activism in developing a local vision for the reconstruction, Nahr el-Bared was celebrated as a successful form of participatory urban design.⁵ The network of activist-professionals who designed the camp's new urban fabric succeeded in embodying the priorities of Nahr el-Bared's inhabitants through an intensive participatory and social mobilization process. The project started to gain recognition in various urban planning circles and was selected as one of ten finalist projects for the Aga Khan Award for Architecture.⁶ On the other hand, Nahr el-Bared is a problematic project because state security priorities dominated the reconstruction and postwar reality.⁷ With half the camp still unbuilt and its future increasingly uncertain, one may legitimately ask what there is to celebrate.

In Nahr el-Bared's progressive urban design values, community activism tangled with state security priorities. Examples abound of both state oppression and local resistance in remaking the camp. But such entanglements are not necessarily unique to Nahr el-Bared. In fact, they are a prevalent theme in histories of the making of camps and, to some extent, cities.

⁵ Abdel Nasser Al-Ayyi, "The Politics of Participation in Reconstruction Planning: The Case of Nahr El-Bared Camp" (master's thesis, Beirut Arab University, 2012); Ismae'l Sheikh Hassan, "Reconstructing Oxymorons: The Palestinian Refugee Camp of Nahr El Bared," in *Human Settlements Formulations and (re) Calibrations*, eds. Viviana d'Auria, Bruno De Meulder, and Kelly Shannon (Amsterdam: SUN Architecture, 2010), 134–41.

⁶ "Reconstruction of Nahr El-Bared Refugee Camp," Aga Khan Development Network, n.d., <http://www.akdn.org/architecture/project/reconstruction-of-nahr-el-bared-refugee-camp> (accessed March 12, 2018).

⁷ Adam Ramadan, "In the Ruins of Nahr Al-Barid: Understanding the Meaning of the Camp," *Journal of Palestine Studies* 40, no. 1 (2010): 49–62; Ismae'l Sheikh Hassan, "Palestinian Camp – Military Relations in Lebanon: The Case of Nahr al-Bared," in *Civil-Military Relations in Lebanon: Conflict, Cohesion and Confessionalism in a Divided Society*, eds. Are John Knudsen and Tine Gade (New York: Palgrave Macmillan, 2017), 121–44.

The Formation of Palestinian Camps

Starting with the formation of the first camps after the forced expulsion of over seven hundred thousand Palestinians from Palestine by Zionist militias in 1948, there has been a long tradition of spatial activism in Palestinian camps in the face of various military and political projects aiming to change, erase, control, or remake the camps in new forms. ⁸ With the formation of the state of Israel and the gradual bulldozing of hundreds of villages, the Palestinians were prevented from returning to their homes. However, these ethnic-cleansing ⁹ practices were paralleled by the refugees' acts of regrouping in new village-based neighborhoods that were being formed within the dozens of Palestinian camps that had been established across the borders of Palestine. ¹⁰ The formation of these neighborhoods is the story of the social reconstruction of hundreds of Palestinian villages within new spatial forms.

Although Israel was successful in controlling and colonizing the geography of Palestine, the Zionist project that aimed to erase the history of the Palestinians and that hoped the refugees would melt into other Arab societies did not prevail. The memory of Palestine and the social structure of its villages was alive and integral to camp life. Over the next decades Palestinian refugees would document the history, geography, and spatial layout of their former villages in hundreds of books, maps, and related productions. ¹¹ But the village neighborhoods within the camp would remain the most powerful archive of Palestinian villages. Here village identity, customs, accents, and social practices were not only preserved but developed into new forms as the exile of the Palestinians stretched from days and months into decades.

The formation of Palestinian camps thus marks the birth of a new type of refugee-camp category, one that eventually became known as the "protracted camp." ^{12/fig. 2} Despite the urbanization of these camps, their refugee occupants do not acquire civil rights or citizenship. Protracted camps, or camp-cities, are maintained as extraterritorial entities that are subject to distinct political arrangements and extralegal categorizations within nation-states, making them vulnerable to manifestations of states of exception.

fig. 2 Map of Palestinian camps across the Middle East.

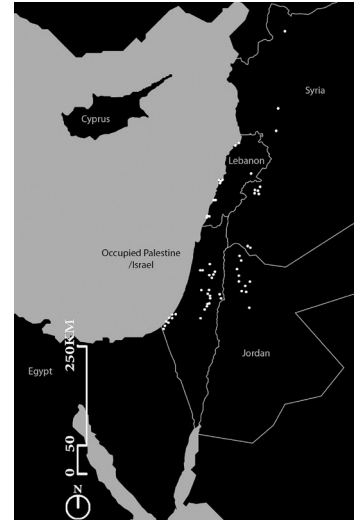
⁸ Nur Masalha, *Expulsion of the Palestinians: The Concept of "Transfer" in Zionist Political Thought, 1882–1948* (Washington, D.C.: Institute for Palestine Studies, 1992).

⁹ Ilan Pappé, *The Ethnic Cleansing of Palestine*, 2nd ed. (Oxford, UK: Oneworld Publications, 2007).

¹⁰ This refers to the borders of Palestine before the establishment of the State of Israel, or what was known as Mandatory Palestine (1920–1948) under the terms of the British Mandate for Palestine.

¹¹ Rochelle A. Davis, *Palestinian Village Histories: Geographies of the Displaced* (Stanford, CA: Stanford University Press, 2010). For related literature, see, for example, Ibrahim Yehia El-Shihabi, *Loubieh, A Thorn in the Zionist Project* [in Arabic], 2nd ed. (Damascus: Dar El Shajara, 2008); Yehya Mahmoud Al-Yehya, *Tantoura, A Village Destroyed by Zionist Occupation* [in Arabic] (Damascus: Dar el Shajara, 2004); Mahmoud Yousef Dakwar, *Qadiha, What Remains* [in Arabic] (Tyre: Palestinian Committee for Culture and Tradition, 2001).

¹² Different types of protracted camps exist in Algeria (Sahrawi), Tibet, Bangladesh, Kenya, and Pakistan. On the Sahrawi protracted camps formed in 1975 in Tindouf, Algeria, and still existing today, see Randa Farah, "Refugee Camps in the Palestinian and Sahrawi National Liberation Movements: A Comparative Perspective," *Journal of Palestine Studies* 38, no. 2 (2009): 76–93.



Mapping as a Tool for Social Mobilization

Given the symbolic nature of Palestinian camps, the destruction of Nahr el-Bared mobilized not only the residents of the camp but a variety of activist networks. Such groups and individuals arrived seeking to give visibility to the cause of Nahr el-Bared and to assist the refugees in their struggle to reclaim their lost camp. Among those seeking to help were local Palestinian activists, Arab and International Palestine solidarity activists, and various activist-professionals, some of whom had experience in other postwar reconstruction projects in Lebanon. These actors collaborated with the large body of local refugee activists who were involved in public issues pertaining to the plight of the camp. A network of networks was in formation, and a new activist platform was in the making.

One of the important activities this platform would conduct was the exercise of mapping. ^{fig.3/fig.4} The objective was to document the location of every building in the camp, complementing that information with a database detailing the area and numbers of floors of individual buildings, as well as their ownership and residents. This would be the first time the dense, organic, urban



fig.3 Mapping of the locations of people and the architectural typology of each home, as produced by NBRC and UNRWA.

fabric of Nahr el-Bared was documented on a map. The mapping exercise took place in Baddawi camp, another Palestinian camp 20 kilometers south of Nahr el-Bared where most of the former residents of Nahr el-Bared sought refuge. The exercise depended on their knowledge, since access to the camp, now a war zone, was not permitted. In this way, even as Nahr el-Bared was being destroyed, a map of the camp was reconstructed from the memory of its displaced residents. However, the act of mapping

involved more than just collecting the information that would be needed for the camp's reconstruction; it was in itself an act of social organization, in which camp residents were mobilized to think about how they wanted to rebuild their camp and what

kind of strategies were needed to ensure their priorities were met. A new entity, the Nahr el-Bared Reconstruction Commission for Civil Action and Studies (NBRC), was created to achieve this objective. NBRC would over time combine two important sources of knowledge within its strategies and members. The first was knowledge of the camp and its community, as well the knowledge of how to create consensus and mobilize residents to struggle for their rights. The second was knowledge in urban planning, urban design, and reconstruction projects. NBRC would prove quite effective in enabling the community to transform its demands for reconstruction into a practical vision. It also empowered the activist-professionals who were developing the local reconstruction vision to contest the state's plan for rebuilding the camp.

Competing Visions

While NBRC was developing its vision in the Baddawi camp, the Lebanese government had commissioned an architectural and engineering consulting company to draw up plans, under the directions of the Lebanese army, for the reconstruction of Nahr

fig. 4 Discussion on the mapping of the locations of people and the architectural typology of each home, as produced by NBRC and UNRWA.



13 NBRC had communicated with various official Lebanese stakeholders in 2007, scheduling meetings and relating community demands for the reconstruction. One of the primary Lebanese stakeholders coordinating the efforts of the reconstruction was the Lebanese-Palestinian Dialogue Committee.

14 After the formation of NBRC, it requested an official meeting with UNRWA's director in Lebanon, Richard Cook, who later asked Muna Budeiri, the deputy director of UNRWA's Camp Improvement Programme, to follow up on the subject. Subsequent meetings made clear that each party needed the other to effect the reconstruction process, and a formal collaboration agreement was reached.

el-Bared. The firm's brief was to ensure the security control of the camp's rebuilt fabric, and thus its proposal was based on a grid with wide streets and free-standing buildings. Apartments were all of one standard size and did not take into consideration the previous home sizes of the refugees. Most problematic, no one from Nahr el-Bared was consulted on how reconstruction should take place. At this stage NBRC was not included in the official planning of the reconstruction.¹³ But after NBRC formed a partnership with the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) — which was created in 1950¹⁴ — they were allowed (through UNRWA) access to the official reconstruction negotiations. The UNRWA-NBRC partnership was strategic in many ways. UNRWA was given access to NBRC's databases and maps, and it committed to upholding the community's priorities for reconstruction and to engage jointly with NBRC on the reconstruction negotiations with the state. In turn, NBRC's broad volunteer network was complemented by the significant staff and resources of the UN agency. The UNRWA team

was led by its camp improvement staff, which included architects and planners who had broad experience with reconstruction projects in the West Bank and Gaza, as well as urban improvement projects for camps in Syria and Jordan. ¹⁵ Together, UNRWA and NBRC would form a joint planning and design unit to develop the detailed design plans for the reconstruction.

The Lebanese state's vision was not accepted by the NBRC-UNRWA coalition, which prepared to present an alternative set of plans for rebuilding the camp. The first priority of the Nahr el-Bared refugees was to preserve the camp's neighborhoods and their 1,697 buildings in their original locations. They demanded that the extended-family building typology be maintained. This building type, which had developed as new family generations built their homes as second and third floors above their parents' ground floor, was the predominant building typology in all Palestinian camps, and it played important political, social, and economic roles in the formation of the urban life of the camps. Given the marginalization of Palestinian camps, the extended-family building allowed families to share resources and provided social and economic support for extended family networks. Families were able to expand their homes vertically and thus multiply the built area of their limited land plot. This was important for young families who could not afford to rent or buy houses outside the camp. The typology also allowed families to generate extra income by transforming parts of the ground floor into

¹⁵ Philipp Misselwitz, "Rehabilitating Camp Cities: Community Driven Planning for Urbanised Refugee Camps" (PhD diss., University of Stuttgart, 2009).



various businesses. Flat roofs served as private open spaces for the family, an important resource in a camp that suffered from high densities and a lack of open space. Most important, the extended-family building was the basic unit of the village neighborhood social structure. Studying this building typology reveals the intricate overlapping of livelihood, social rela-

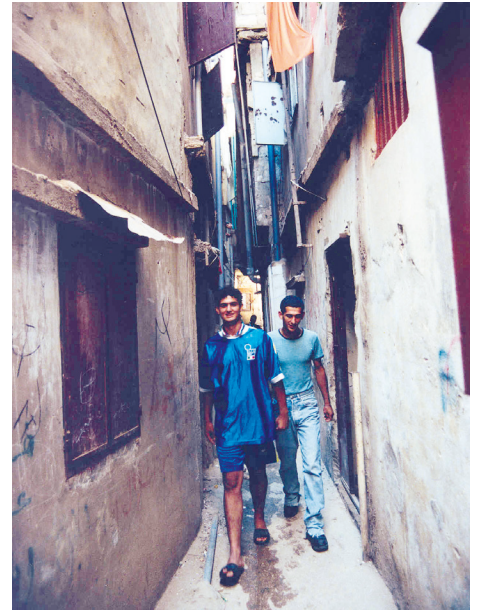
fig. 5 Aerial image of Nahr el-Bared camp before the camp's destruction.

tions, and political identity in the physical form of the camp.

The community principles for reconstruction, which were produced by NBRC, also mentioned the need for improving the physical form of the camp. One of the points was to increase the sizes of homes and plots for families who were cramped in

fig. 6 Alley at Nahr el-Bared.

problematically small apartments. Standards for minimum plot and apartment sizes were established, as was a formula that deducted areas from larger homes to be redistributed to smaller ones. Through such principles and strategies, notions of social justice were introduced into the design process. Another important demand was the need to increase open space in the camp. There was only a 12 percent open space within a total camp area which was fit within a 400×450 -meter area. Most of this open space took the form of the camp's 1-to-1.5-meter-wide alleys. Given that all buildings were built against one another, thus sharing sides and backs (most of which lacked windows), the front elevations facing the alleys were the only source of ventilation and light for most of the camp's 1,697 buildings. fig. 5/fig. 6 However, one of the most challenging limitations imposed by the Lebanese prime minister was that the area of the camp could not be increased. More problematic still, the Lebanese army refused, for security reasons, to recreate the historic fabric of the camp. Negotiations on the design appeared to be at a stalemate, and the displaced of Nahr el-Bared worried that the Lebanese state was not serious about rebuilding their camp.



Designing a New Urban Fabric

The UNRWA-NBRC design team developed a mechanism that allowed for improved natural lighting and ventilation of the camp's urban fabric. It involved decreasing the size of footprints of buildings and adding the deducted area as upper floors. A formula was developed and negotiated with the camp committees, and the open space in the camp was increased from 12 percent to 35 percent. The locations of the camp's buildings, urban blocks, and paths were kept the same. Urban blocks were joined together, and the newly gained open space was redistributed across the camp through two strategies. The first was to widen the alleys that circumscribed the new blocks so they became streets that were 4.5 to 6 meters wide. This constituted the more formal, commercial, and public networks of the rebuilt camp. The second strategy for redistributing open space was by complementing the alleys that ran through the middle of the larger combined blocks with pockets of semipublic space. This maintained the human scale of the alleys, an integral part of the

camp's urban fabric, while simultaneously adapting that space to allow better ventilation and lighting possibilities within the depths of the urban block. This secondary network also created the more intimate and family-oriented spaces that were more suitable for female gatherings and children's play.

In presenting the project to the Lebanese government and military, UNRWA-NBRC shifted strategy. They presented the combined urban blocks as stand-alone buildings that could be controlled from the perimeter streets. The dense urban tissue that was ingrained in the block as well as the network of alleys was



fig.7 The two representations of the Nahr el-Bared reconstruction, with blocks represented as abstract envelopes (bottom) versus urban blocks that contain multiple buildings, clusters, alleys, and pockets within their interior (top).

rendered invisible in their representation of the community-designed project. Thus, instead of trying again to convince the military of the value of the community principles and of the types of urban tissue that were most suitable for urban life in the camp, they illustrated how the camp, if rebuilt according to the proposed plans, would be controllable by the military. **fig.7** In this way a consensus was reached, and the official reconstruction project was launched. UNRWA-NBRC would lead

a detailed participatory process, working with the building owners to design the individual structures and working with residents to design the urban blocks and neighborhoods. Construction started by 2009, and a new urban fabric was being formed that reconstituted the camp's social structure but immersed it in a new spatial form.

The Limits of Design

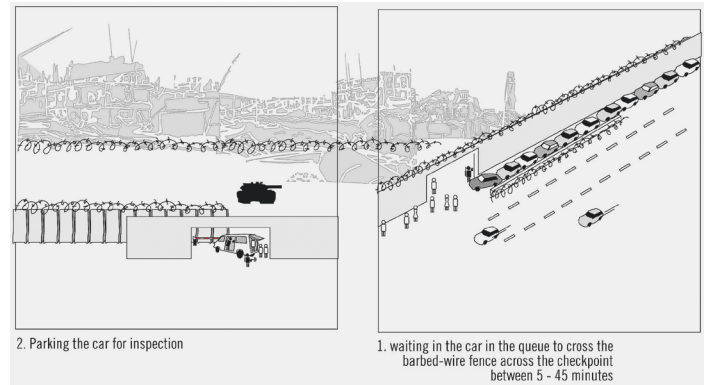
However, agreement on the design of the camp did not help negotiations between the refugees and the state concerning the governance of postwar Nahr el-Bared. "Security" was the highest priority for Lebanese officials, and Nahr el-Bared's civilian life continued to be controlled by the Lebanese military. **16/figs. 8 a–b/fig. 9**

One of the methods by which the camp's space was controlled was a rigid reconstruction process that was dependent on international funding, primarily from Western states and Gulf countries. Money was funneled to UNRWA, which hired the contractors who would rebuild the camp's new urban blocks. However, as international funds for reconstructing Nahr el-Bared decreased because of the escalating wars, armed conflicts, and refugee crises that have dominated the Middle East in recent years (e.g., Syria, Yemen, Iraq, Libya), the pace of reconstructing

16 The military's presence inside the Palestinian camp was a new reality, one that had not existed before the war in Nahr el-Bared or in other Palestinian camps in Lebanon since 1969. Postwar Nahr el-Bared thus represented a new precedent for how Palestinian camps would be governed and what roles the state and Lebanese military would play within them.

figs. 8 a–b Graphics developed by Lebanese and Palestinian activists exposing the security restrictions around Nahr el-Bared. These measures contrast strongly with the architecture of the rebuilt camp.

Nahr el-Bared slowed almost to a halt. Today the primary reason given for the stalled rebuilding of the camp is lack of funding. But this hides the important fact that the reconstruction framework prevents refugees from rebuilding their homes by themselves. The long-standing tradition of Palestinians reconstructing their own camps attests to the effectiveness of refugee-led processes for swiftly rebuilding camps with meager resources and without having to wait for large-scale international funding. For this reason, the marketing of Nahr el-Bared's reconstruction as an interesting model of participatory planning is misleading, since participation was limited only to the architectural design of the camp. Contrasting that were top-down processes dictating the practical aspects of how the camp would be built, governed, and transformed from an open economic center in northern Lebanon into an isolated high-security enclave.

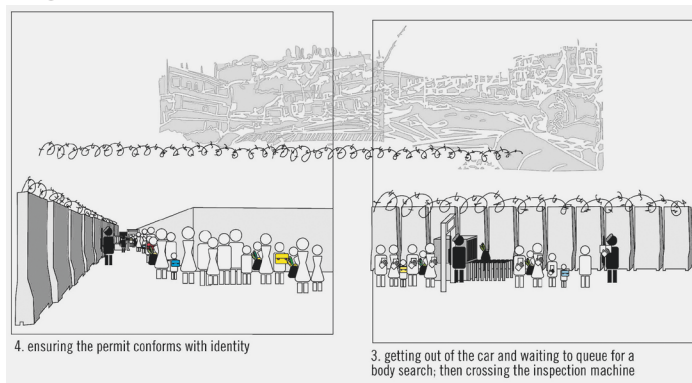


After reconstruction had commenced, Palestinian political factions started to see NBRC as a threat to their legitimacy as the refugees' sole representatives. Such sentiments increased when NBRC started to lobby on issues that were more political, such as addressing the Lebanese military control of the post-war camp or advocating for reform of the undemocratic mechanisms by which the Palestinian political parties governed the camp. Consequently, the political factions started to infiltrate NBRC's open decision-making committees. This compromised its autonomy and eventually created structural splits within its bodies, leading by 2010 to the final dissolution of the fractured organization. A few months later, the Palestinian political parties would create a "new" body with the same name and charged with facilitating the participatory design processes between the camp residents and UNRWA. The new NBRC had a strictly technical mandate and was to be staffed by employees who were funded by UNRWA. NBRC's role as a grass-roots activist platform had ended.

However, new platforms for activism started to emerge that were openly critical of the factions, the Lebanese military, and UNRWA's management of the reconstruction project. One example is the 2011 uprising that followed the Lebanese military's killing of a young boy in the camp as soldiers tried to disperse a crowd of protestors. ¹⁷ Camp youth started throwing rocks at

¹⁷ "Palestinians Killed at Lebanon Refugee Camps," *Al Jazeera*, June 18, 2012, <https://www.aljazeera.com/news/middleeast/2012/06/2012618175048595517.html> (accessed March 13, 2018).

the soldiers, and the military was forced to retreat to the borders of the camp for the first time since the end of the war in 2007. The Palestinian protestors also attacked their Palestinian factional leaders with sticks when they attempted to join the protest, blaming them for their failure to improve conditions in Nahr el-Bared after the war. More Palestinian refugees were shot in the following days, and an open strike was called. The protestors did not want to be personally involved in negotiations with the Lebanese military, and the Palestinian



ian factions volunteered to play this role. The factions requested that a joint committee be set up between the protestors and the factions to coordinate the strike. The strike eventually succeeded in winning some concessions from the military, such as canceling the entry permit system.¹⁸ However, the security perimeter and checkpoints remained in place. As the months passed, the young protestors camping in the streets grew weary, the factions started pressuring them to dismantle their strike, and they eventually yielded.

Entanglements

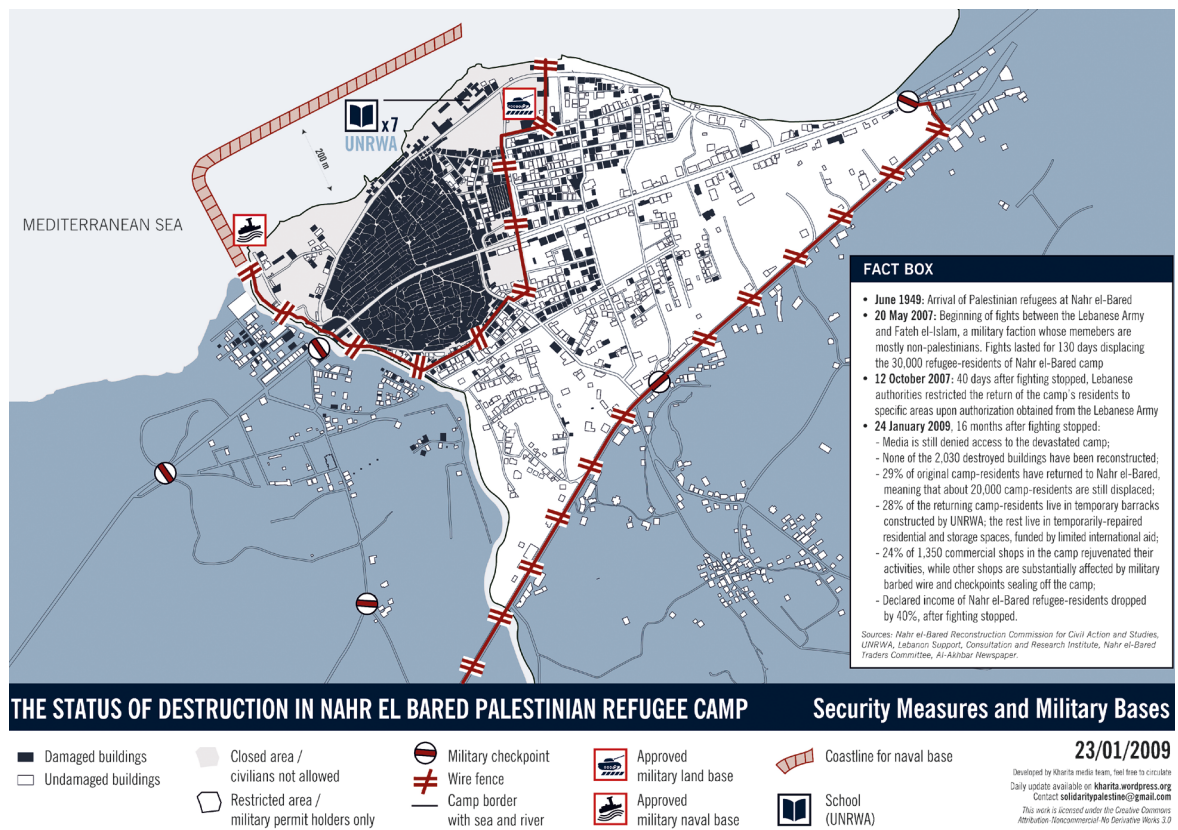
On the one hand, the design of the rebuilt camp succeeded in addressing many of the refugees' priorities for protecting their built assets and social practices and in communicating the political meaning of the camp as a space of Palestinian identity and activism. On the other hand, complex laws, systems, and power dynamics remain in place that maintain the camp as a space of exclusion and marginalization. These include policies of the Lebanese state and army that strip Palestinian refugees of various civil rights, such as the right to own property¹⁹ and the right to work in various professions. In addition, the policies demonstrate that the Lebanese state views the Palestinians and their camps primarily through the lens of security.²⁰ The traditional Palestinian political parties in Lebanon have proved incapable of addressing both the historic and contemporary struggles of the Palestinian refugees, at times even playing negative roles, as when they appropriate and fragment the new forms of activism that emerge in the camps. Meanwhile, the origins of the Palestinian refugees' plight remain in place due to Israel's colonization of Palestine and ongoing efforts to prevent Palestinian refugees from returning to their lands.

¹⁸ The entry permit system entailed that no person — whether camp resident or visitor — could enter the camp, or its surroundings, without having an entry permit. Entry permits were documents that were issued by the military. Applicants had to apply for an entry permit, which were constantly renewed.

¹⁹ Nizar Saghie and Rana Saghie, *Legal Assessment of Housing, Land and Property Ownership, Rights and Property Law Related to Palestinian Refugees in Lebanon* (Oslo: Norwegian Refugee Council, October 2008), <https://www.nrc.no/globalassets/pdf/reports/legal-assessment-of-housing-land-and-property-ownership-rights-transfers-and-property-law-related-to-palestinian-refugees-in-lebanon.pdf> (accessed August 2, 2018).

²⁰ Sheikh Hassan and Hanafi, "(In)Security and Reconstruction" (see note 1).


fig.9 Map developed by Lebanese and Palestinian activists exposing the security restrictions around Nahr el-Bared. These measures contrast strongly with the architecture of the rebuilt camp.



While the reconstruction of Nahr el-Bared demonstrates the important roles design professionals can play in empowering local activist struggles, it also shows the limits of design in addressing the structural inequalities and injustices that are the day-to-day reality in places such as the Palestinian camps. Such conditions will inevitably push designers who are genuinely interested in addressing inequality into forms of activism that are more political and radical.

The Control Room: Material and Immaterial Architectures of Drone Warfare

Eva Schreiner

Two hundred ten people are needed to carry out a standard U.S. Air Force Predator or Reaper drone operation. ¹ These 210 people form a network of actors across the globally dispersed spaces of violence that constitute the present-day infrastructure of war and empire. First, there is the drone vehicle itself, which must take off from a U.S. base near its place of operation — for instance, Chabelley Airfield in Djibouti. To locate potential targets, a vast intelligence network must be in place from Yemen's Old City of Sana'a to Pakistan's mountain regions. U.S. Air Force drones are further controlled via satellites that send information to a ground station at Ramstein Air Base in Germany. From Al Udeid Air Base in Qatar, as well as from Washington, D.C., senior U.S. officers, military lawyers, and a staff judge, monitor, and potentially intervene in operations. ² While these spaces of violence form the background to this essay, I focus on a small trailer located in the desert just outside Las Vegas, Nevada. The walls of this windowless room are plastered with screens that look several generations old. Two heavy, beige leather armchairs occupy most of the space, while plastic keyboards, joysticks, telephones, and clipboards are scattered around them. It might not look like it, but this room is a central node in the U.S. military's high-tech drone warfare. In this so-called "tin box" ³ at Creech Air Force Base, a drone pilot and a sensor operator remotely control the drone, which is located 8,000 miles away.  fig.1

In many ways, the drone control room is an office space. Women and men, commuting to their jobs from towns nearby, spend up to twelve-hour shifts sitting in comfortable chairs in an enclosed, air-conditioned room looking at screens, talking to their colleagues, and clicking buttons. Instead of business suits, however, their workwear consists of camouflage flight suits, and the pulling motion of their forefinger launches a deadly missile. How are we to comprehend this room, with its mundane atmosphere and its grim mission? This seemingly paradoxical space sheds light on a warfare that is both endless and boundless. The logic of drone warfare is inherent to the architecture of the drone control room. Specifically, the ways of seeing established in this room and materialized in its interior space and its modular container form are linked to the present-day form of war that is globally dispersed, utterly asymmetrical, and potentially endless in its geographic and temporal scope. Nevertheless, these underlying mechanisms are not entirely new. Analyzing the architecture of the drone control room also shows that, despite the present

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¹ See Michael P. Kreuzer, "Remotely Piloted Aircraft: Evolution, Diffusion, and the Future of Air Warfare" (PhD diss., Princeton University, 2014), 169.

² See, e.g., Derek Gregory, "Drone Geographies," *Radical Philosophy* 183 (2014): 7–19; Lisa Parks, "Vertical Mediation and the U.S. Drone War in the Horn of Africa," in *Life in the Age of Drone Warfare*, eds. Lisa Parks and Caren Kaplan (Durham, NC: Duke University Press, 2017), 134–57. Operated from Langley, Virginia, the Central Intelligence Agency runs its own covert drone program, which is deeply interwoven with the U.S. military drone program I focus on.

³ Ed Pilkington, "Life as a Drone Operator: 'Ever Step on Ants and Never Give It Another Thought?'" *The Guardian*, November 19, 2015, <https://www.theguardian.com/world/2015/nov/18/life-as-a-drone-pilot-creech-air-force-base-nevada> (accessed May 12, 2017).

fig. 1 A U.S. Air Force pilot controls an MQ-9 Reaper drone from Creech Air Force Base, Nevada.

urgency and futuristic appearance of drone warfare, its fundamental logics were established more than five decades ago. Crucially, architecture is here understood not only physically but also as a spatial ordering of perception. The container functions as a material frame for a specific way of seeing, one on which the action of killing is based. Both perception and reaction happen in and through the container frame: material and immaterial architectures are fundamentally intertwined.



4 On this distinction, see Peter M. Asaro, "The Labor of Surveillance and Bureaucratized Killing: New Subjectivities of Military Drone Operators," *Social Semiotics* 23, no. 2 (2013): 196–224, here 216.

5 Cf. Derek Gregory, "Lines of Descent," *Open Democracy*, November 8, 2011, <https://www.opendemocracy.net/derek-gregory/lines-of-descent> (accessed May 10, 2017); Priya Satia, "Drones: A History from the British Middle East," *Humanity: An International Journal of Human Rights, Humanitarianism, and Development* 5, no. 1 (2014): 1–31. For the development of the fantasy of fighting at a distance, see Sven Lindqvist, *A History of Bombing* (New York: The New Press, 2001).

6 Cf. Grégoire Chamayou, *A Theory of the Drone*, trans. Janet Lloyd (New York: New Press, 2015), 26–29; Peter W. Singer, *Wired for War: The Robotics Revolution and Conflict in the 21st Century* (New York: Penguin Press, 2009).

7 Michael T. Flynn, Rich Juergens, and Thomas L. Cantrell, "Employing ISR: SOF Best Practices," *IFQ* 50 (2008): 56–61, here 56. Emphasis in original.

8 Betsy Reed et al., eds., "The Drone Papers: Documents: Small Footprint Operations 2/13," *The Intercept*, October 15, 2015, <https://theintercept.com/document/2015/10/15/small-footprint-operations-2-13> (accessed June 21, 2018).

My aim in focusing on the underlying logics of the room instead of its concrete design is to intervene in two aspects of the current academic debate on drone warfare. Drones, officially termed unmanned aerial vehicles (UAVs) or remotely piloted aircraft (RPA),⁴ are predominately talked about in terms of cyberwarfare and robotics. The technology emerges from a history of U.S. imperialism and global violence: from air raids in the Second World War to Cold War disputes and proxy wars; from Hiroshima to Baghdad.⁵ Most historical accounts of drone warfare focus on this technological aspect and its roots in the "military-industrial complex," and even critical accounts display a certain technological awe.⁶ Underneath the occluding high-tech surface, however, the drone is part of an intricate system of technosocial entanglements.

Second, although scholarship has tended to focus on it, the specific form of killing at a distance is not the main innovation constituting the drone system. Rather, the underlying mechanism of information processing inherent to this weapons system is what is crucial to understanding its workings. Drones are concerned with intelligence as much as with killing. The management of information occupies such a central place in drone warfare that the traditional division between the preparatory stages of reconnaissance and the active procedure of killing has become malleable: "Today, intelligence is operations," announced General Michael Flynn, then director of intelligence at the U.S. Central Command, in 2008.⁷ As U.S. military documents leaked by Edward Snowden and published by *The Intercept* in 2015 show, the doctrine of intelligence, surveillance, and reconnaissance (ISR) has become a key component of drone operations in an integrated cycle to "find, fix, and finish" a target.⁸ Drone control rooms such as the one in Nevada house and enable this consolidation of intelligence and operations. Information is

gathered, perceived, managed, and acted upon in and through the architecture of the control room, which therefore functions as a data-processing machine. Its architecture operates at levels that are not necessarily visible and that exceed standard understandings of spatial form.

From the Situation Room to SAGE Centers: Control Rooms in History

The idea of a professionally designed central control room for gathering military information emerged in the United States during the Second World War. Established architects, among them Buckminster Fuller, Louis Kahn, and Eero Saarinen, were recruited into the ranks of the Office of Strategic Services (OSS), America's Second World War intelligence bureau and precursor of the Central Intelligence Agency (CIA). With their help, the notion of a "war room," conceived as a top-secret, windowless building underneath the White House, took shape in the early 1940s. In 1943, Saarinen presented a model version of a "situation room" to the OSS; it was, however, never built. ^{9/fig.2} Another well-known instance in the history of military control rooms can be found in Cold War weapons systems. In the 1950s, the Semi-Automatic Ground Environment (SAGE) was envisioned as the first computerized air defense system of command, control, and communications, but it proved obsolete before its completion. Several of its control centers, massive windowless four-story blockhouses, had already been built. ^{10/fig.3}

When comparing the formal qualities of this architectural "type," a linear trajectory of technological development seems to emerge. The screens and charts dominating the walls of the windowless control room become increasingly sophisticated, the

⁹ Barry Katz, "The Arts of War: 'Visual Presentation' and National Intelligence," *Design Issues* 12, no. 2 (1996): 3–21, here 3–6.

¹⁰ Paul N. Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America* (Cambridge, MA: MIT Press, 1996), ch. 3.

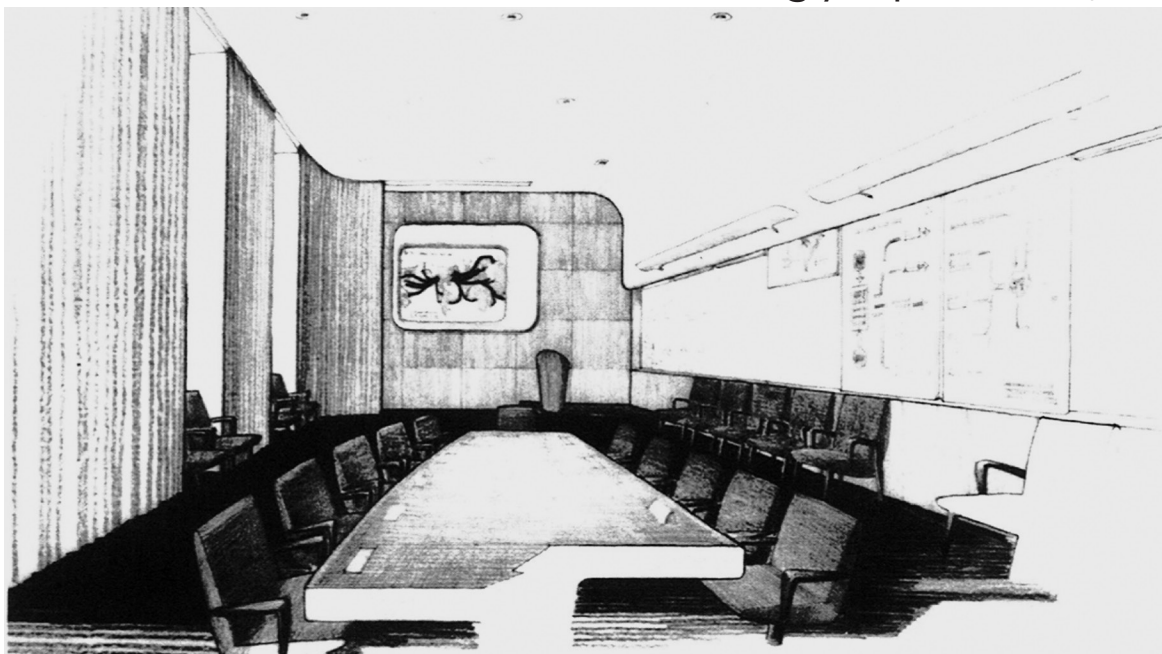


fig.2 Eero Saarinen, drawing for "Situation Room," 1943.

interaction with their handlers progressively more direct. However, attending to the ways information is managed in these spaces allows for a more complex picture to emerge. In the 1940s, the OSS's goal was to gather intelligence, evaluate it, and swiftly present it to decision makers. In the rooms designed for this purpose, multiple layers of images, maps, and diagrams could be superimposed on screens and spatially organized around central decision makers, providing President Franklin D. Roosevelt with "a panorama of concentrated information" and hence enabling him to absorb masses of data in short briefing sessions.¹¹ The underlying assumption of this emergent "philosophy of presentation"¹² was that the world could be known, facts about it accurately represented, and, based on that comprehensive knowledge, decisions taken.

¹¹ Katz, "Arts of War" (see note 9), 5. Cf. Jean-Louis Cohen, *Architecture in Uniform: Designing and Building for the Second World War* (Montreal: Canadian Centre for Architecture, 2011), 322.

¹² Katz, "Arts of War" (see note 9), 5.

These basic principles of information processing, evident in the Second World War-era situation room, are key to understanding the significant changes that would arise in information management, and thus in approaches to military control rooms, in postwar America. Developed in a collaboration of the U.S. Air Force with IBM, the Massachusetts Institute of Technology (MIT), and several technology corporations, SAGE stemmed from the Radiotype system IBM had exhibited at the 1939 World's Fair but was more than a technological advancement. On the one hand, it was tied to a sociopolitical context that made it necessary for the military to find ways to conduct warfare that avoided the loss of U.S. soldiers' lives.¹³ On the other hand, it arose from a new way of systemic thinking that dominated the then-nascent fields of operations research, game theory, and cybernetics. At its center was a discourse surrounding the systemic interaction of "man" and "machine."¹⁴ Instead of the situation room's panorama of information processed by a decision maker and subsequently acted upon elsewhere, SAGE aimed at the integration of information and action in its very design.

¹³ Cf. Edwards, *Closed World* (see note 10).

¹⁴ John Harwood, *The Interface: IBM and the Transformation of Corporate Design, 1945–1976* (Minneapolis: University of Minnesota Press, 2011), 125.

As architecture historian John Harwood notes, although the SAGE control rooms were distributed across U.S. territory, the individual locations were integrated into "a seamless network, both at the technological level of information flow and at the level of telescopic architectural modularity."¹⁵ Similar to the Second World War-era situation room, within each control center the world was represented abstractly on screens, rendering it "manageable, coherent, and rational through digital calculation and control."¹⁶ What differed, however, was the volume of constantly updated information being channeled into these rooms from radar stations and other sources. The amount of data was too large to be comprehended piece by piece. The IBM computer at the heart

¹⁵ Ibid.

¹⁶ Edwards, *Closed World* (see note 10), 104.



fig. 3 SAGE operators, c.1959.

of SAGE, as architecture historian Reinhold Martin points out, was therefore designed to collect and combine incoming data and map it onto the cathode-ray displays, a process “intended to distribute an excess of information into an organized array of organized patterns.”¹⁷ Further, this spatialized information was then “processed through the eyes and brains of ‘operators’ entrusted with recognizing aberrant patterns” and reacted upon “in real time” via light guns.¹⁸ Harwood’s and Martin’s choices of

17 Reinhold Martin, *The Organizational Complex: Architecture, Media, and Corporate Space* (Cambridge, MA: MIT Press, 2005), 190.

18 Ibid. For the idea of “real time,” see also John Harwood, “The White Room: Eliot Noyes and the Logic of the Information Age Interior,” *Grey Room* 12 (2003): 5–31, esp. n. 40.

words — “a seamless network,” “architectural modularity,” “organized patterns” — hint at the fundamental shifts underlying SAGE. The singular and centralized decision-making room of the Second World War had been expanded into a networked system of modular control centers in which decisions were not only made but executed.

SAGE should also be understood within a wider architectural discourse concerning the interaction of man and machine/screen in the 1950s and 1960s. Prominent designers György Kepes and Ray Eames and Charles Eames, important actors within the “military-industrial-academic complex,” led the way. Kepes’s war-time experiences in an airplane cockpit led him to develop a new concept of visual perception, designed for “information flows emanating from communicating machines.”¹⁹ The image was conceived not as a fixed representation but as a “landscape,” a constantly evolving process. Historian of science Orit Halpern argues that with this epistemic shift (from static representation to dynamic flow) vision itself came to be understood as “an algorithmic method or a logical pattern.”²⁰ In both Kepes’s and the Eameses’ teachings, the individual objects on the screen were neglectable, and their connection or “common structure” was the focus. Students were trained both as consumers of data, unearthing the logic within a large data field, and as the designers of vision itself, the managers of this pattern.²¹

19 Orit Halpern, “Perceptual Machines: Communication, Archiving, and Vision in Post-war American Design,” *Journal of Visual Culture* 11, no. 3 (2012): 328–51, here 329.

20 Ibid., 335, 344.

21 Ibid., 341.

22 Ibid., 343.

23 Harwood, *Interface* (see note 14), ch. 4.

The Eameses took a similar approach in their design of the so-called “Information Machine” for IBM’s 1964 World’s Fair pavilion. Visitors to the Saarinen-designed building that housed the Information Machine found themselves in a closed oval, the walls plastered with screens. As Halpern notes, “the spectator was exposed not to any singular piece of content but to a perceptual field.”²² While the exhibit was an important moment in IBM’s larger mission of “naturalizing the computer,”²³ it also exemplifies the changing concept of vision in an information economy and the fundamental shift in information management that occurred after the Second World War. Precisely this new “landscape” of vision underlay the patterns mapped and managed in the interaction of operator and machine in the SAGE control room.

Perceptual Architecture: Cold War Logics in Present-Day Drone Warfare

This transformation in the conceptualization of vision and information processing in the 1950s and 1960s would form the basis of the drone control room’s perceptual architecture five decades later. The first strike by an American armed drone is recorded in October 2001 in the immediate aftermath of the September 11 attacks, and the use of drones has since seen a steep increase. The militarized drone is hence inextricably linked to the so-called “War on Terror.” Yet this new, ongoing war has deep historical roots, and anthropologist Joseph Masco convincingly traces the counterterror state of post-9/11 back to the governing of nuclear fears in the Cold War. Despite the lack of easy historical symmetries and linear technological developments, the underlying processes through which fear is mobilized and security normalized repeat themselves.²⁴ Similarly, the epistemic shift in vision coming out of the Cold War context led to configurations that allow for the present-day U.S. drone warfare to proceed. The logics developed in the SAGE control room more than fifty years ago are the same logics underlying the drone control room — of course, with distinct consequences in their present setting. These immaterial mechanisms are architectural insofar as they spatially order perception.

24 Joseph Masco, *The Theater of Operations: National Security Affect from the Cold War to the War on Terror* (Durham, NC: Duke University Press, 2014).

The 1940s situation room was based on the idea that all necessary information can be collected and presented in an alignment that allows each data point to be known. In the 1950s, as the volume of incoming information became too large for each data point to be processed individually, the focus was shifted to understanding general concepts — a landscape to be mapped and managed. In drone warfare, this process is at work from the outset. Before a single shot is fired, the drone crew — namely the pilot and

sensor operator in the control room, as well as the team of military intelligence analysts behind them — needs to identify and locate a potential target. General Flynn describes “multiple sources of intelligence” being “massed” in order to detect an “insurgent” hiding “in plain sight.”²⁵ In traditional air operations, the gathering of intelligence was separated from the use of lethal force: a pilot’s job was the identification and destruction of the target, not its selection. In drone warfare, however, pilot, sensor operator, and mission intelligence coordinator are part of the decision-making process in what media scholar Peter Asaro terms a “tighter coupling of surveillance and the decisions to kill.”²⁶

²⁵ Flynn, Juergens, and Cantrell, “Employing ISR” (see note 7), 57–58.

²⁶ Asaro, “Labor of Surveillance and Bureaucratized Killing” (see note 4), 207.

What the drone crew sees on its screens is a compiled list of aggregated information from military and CIA sources, as well as the National Security Agency’s (NSA) global metadata surveillance program, which together identify and geolocate potential targets.²⁷ This process is based on so-called “pattern-of-life analysis,” which is part of the “activity based intelligence” (ABI) doctrine. Put simply, the doctrine assumes terrorists leave behind traceable “signatures,” such as buying fertilizers used to build homemade bombs, visiting sensitive locations, or chatting with other “suspicious” people (all of these factors are of course highly racialized).²⁸ Taken together, such individual data points produce a behavioral pattern (hence the name “activity based intelligence”), which can be identified and subsequently surveilled. The choice of whom to track is therefore already based on a pattern analysis in which individual data points matter only when they occur together in a certain constellation.

²⁷ See, e.g., Lisa Hajjar, “Drone Warfare and the Superpower’s Dilemma (Part 1),” *Jadaliyya*, September 21, 2015, [http://www.middleeastdigest.com/pages/index/22734/drone-warfare-and-the-superpower's-dilemma-\(part-1](http://www.middleeastdigest.com/pages/index/22734/drone-warfare-and-the-superpower's-dilemma-(part-1) (accessed June 18, 2018).

²⁸ Grégoire Chama-you, “Oceanic Enemy: A Brief Philosophical History of the NSA,” *Radical Philosophy* 191 (2015): 2–12.

Because the amount of available data is assumed to be infinite, these signatures are largely analyzed by nonhuman automation software, upon which the military and the CIA have come increasingly to rely. Several private companies (most notably IBM, a recurring actor in this essay) play a vital role in the development of what the industry calls “large-scale anomaly detection” programs.²⁹ For technological, as well as political and legal reasons, the process is not completely automated. However, the pilot and sensor operator follow the same pattern-seeking logic as the algorithm. Analyzing military reports, Asaro stresses the information-processing demands on the drone crew, which is required to “interpret a variety of pieces of information from various sources that are in turn mediated by various technologies and interfaces.”³⁰ The crew treats incoming data points not individually but as part of a pattern within the “complex and dynamic information environment”³¹ of the drone control room.

²⁹ The leaked IBM documents can be accessed under: Reed et al., “Drone Papers” (see note 8). Cf. Jon Schwarz, “Drones, IBM, and the Big Data of Death,” *The Intercept*, October 23, 2015, <https://theintercept.com/2015/10/23/drones-ibm-and-the-big-data-of-death/> (accessed September 29, 2017). While IBM might be most famous for their computer hardware, it has always defined itself to be in the “business of controlling, organizing, and redistributing information.” Harwood here quotes Eliot Noyes, the central figure in the redesign and management of IBM from the 1950s onwards. Harwood, “White Room” (see note 18), 13. Emphasis in original.

³⁰ Asaro, “Labor of Surveillance and Bureaucratized Killing” (see note 4), 209.

³¹ Ibid.

What matters is the relationship between individual items flaring up on the screen. The potential target is not analyzed in

terms of individual data points but according to its relationships to things (fertilizer), places (a mosque), and people (other potential targets). The NSA calls this process “contact chaining”: the target is produced based on a network of relationships and understood, in the words of philosopher Grégoire Chamayou, as a “reticular individuality.”³² Therefore, not only does the drone control room operate as a node in the dispersed network of drone warfare, but the perceptual architecture of the room itself functions upon a mechanism of networked space. Vision is no longer understood as a static process but has become networked, a process of seeking patterns among dynamic data points.

A related key mechanism of the drone control room’s perceptual architecture concerns the production of a new relationship between past, present, and future. The 1950s and 1960s work of designers such as Kepes and the Eameses was tightly connected

to that of communications theorists who put forward the idea that information is not an index of past or present events but is instead the potential for future action.³³ The data transmitted to SAGE and now the drone control room is hence analyzed in terms of the potential it holds for future events to take place.

IBM puts it more confidently: “Analytics is the study of data to discover patterns, opportunities and linkages that enable prediction and inform decisions.”³⁴ However, given that seeing, understood as pattern making, is based on the continuous recombination of information previously stored in an infinite dataset, the potential futures that are developed are always already part of the process. A world of feedback loops is created. Most directly, this process is visible in the ABL targeting model of “find, fix, finish, exploit, and analyze (F3EA),” in which killing an “objective” simply serves as the basis for finding “new lines of operations” — a never-ending, self-referential cycle.^{35/fig. 4}

This new temporal relationship should be situated within a larger context of counterinsurgency that the U.S. military, according to anthropologist Masco, presents as “endless, boundless, and defensive.” The resulting security state apparatus “constitutes a dangerous future as its object of concern.”³⁶ That is, what is projected as the basis for action in the present is an imagined but potentially catastrophic future. No matter how unlikely, uncertain futures are mapped out and, significantly, acted upon in the form of “preemptive strikes.”³⁷ What is promised and expected

³² Chamayou, “Oceanic Enemy” (see note 28), 6.

fig. 4 The targeting model of “find, fix, finish, exploit, and analyze (F3EA),” 2008.

³³ Halpern, “Perceptual Machines” (see note 19), 339.

³⁴ IBM Center for the Business of Government, *From Data to Decisions III: Lessons from Early Analytics Programs* (Washington, D.C.: Partnership for Public Service, 2013), 1.

³⁵ Flynn, Juergens, and Cantrell, “Employing ISR” (see note 7), 57.

³⁶ Masco, *Theater of Operations* (see note 24), 1.

³⁷ Cf. Louise Amoore, *The Politics of Possibility: Risk and Security beyond Probability* (Durham, NC: Duke University Press, 2013).



is an anticipatory control of time to come: the transformation of an unknowable future into a knowable and calculable system. As then-Secretary of Defense Donald Rumsfeld stated in 2002, the central concern in the War on Terror is the not-yet-visible dangers, the “unknown unknowns.”³⁸ Looking for “unknown unknowns” results in a search for “terrorist behavior” that does not subscribe to a fixed definition of what “terrorist behavior” is. This process can be understood based on the 1960s shifts in perception. Since the focus in a pattern-seeking algorithm is not on the individual data points but on their relationships, and since lines drawn between data are mobile, the resulting form of “terrorist behavior” is able to take new shapes and define new forms of future threats continually.³⁹

Crucially, however, to spot what is unknown, one needs to possess an inventory of known forms. Drone operators are supposed to develop a “target intimacy to the degree that they could easily recognize *something unusual*.”⁴⁰ This idea of the unknown or unusual is strictly empirical, Chamayou argues: “it is *learned* ... on the basis of an analysis of frequencies and repetitions in given sets of activities.”⁴¹ Not only is the computer algorithm programmed to spot the anomaly (a discrepancy within the patterns of regularities); human operators in the drone control room are required to do the same. These processes at work in the immaterial, perceptual architecture of the drone control room are designed. The notion of seeing as seeking patterns in order to identify potential future actions is actively produced. This notion is also becoming part of the material realm.

Container Interiors

The perceptual logics underlying the drone control room are materialized in its physical architecture in multiple ways. The room’s interior space has a certain haphazard quality to it, with its cheap-looking plastic appliances and paper checklists. On one level, this speaks to the rapidly expanding nature of drone warfare over the last fifteen years, but it also continues established, pre-9/11 mechanisms, which do not actually require costly changes in its (visible) hardware. The mundane appearance of the room further raises questions of representation and image circulation. After all, the available photographs and information about the room (including the image reproduced here) stem almost exclusively from the U.S. military.

What warrants attention, therefore, is not so much the old-school design of the monitors as their quantity. The multitude of screens and monitors mirrors the complex network of data analysis proceeding not only in the algorithms running in

³⁸ See Errol Morris, “The Certainty of Donald Rumsfeld (Part 1),” *New York Times*, March 25, 2014, <https://opinionator.blogs.nytimes.com/2014/03/25/the-certainty-of-donald-rumsfeld-part-1/> (accessed September 29, 2017).

³⁹ A report published by IBM quotes a RAND senior policy analyst saying, “The spirit of it [ABI] breaks the traditional intelligence paradigm. ... ABI says no, we don’t know what we’re looking for and by the way, we may find the answer before we know the question.” IBM Center for the Business of Government, *From Data to Decisions III* (see note 34), 32.

⁴⁰ Flynn, Juergens, and Cantrell, “Employing ISR” (see note 7), 59. My emphasis.

⁴¹ Grégoire Chamayou, “Patterns of Life: A Very Short History of Bodies,” *The Funambulist*, 2014, <https://thefunambulist.net/history/the-funambulist-papers-57-schematic-bodies-notes-on-a-patterns-genealogy-by-gregoire-chamayou> (accessed May 10, 2017). Emphasis in original.

42 Tonje Schei, "Drone Wars: The Gamers Recruited to Kill; Extract from the Film 'Drone,'" *The Guardian*, February 2, 2015, <https://www.theguardian.com/news/video/2015/feb/02/drone-wars-gamers-recruited-kill-pakistan-video> (accessed February 28, 2018).

fig. 5 Drone control room container on a U.S. Air Force base, c.2012.



43 Harwood, *Interface* (see note 14), 126.

44 Martin, *Organizational Complex* (see note 17), 186.

the background but in the room itself, through the pattern-seeking analysis performed by the drone crew. Yet these displays are only one source of data. One drone pilot, for instance, tells of a photograph of the second plane hitting the World Trade Center on September 11. Plastered to the wall in direct proximity to the screens, it functions, in his words, "just to try to make you pissed off about it all over again right before you go do your job." 42 This image, and its evocation of threat, is thus another data point to and from which relations are drawn, demonstrating once more how, in a pattern-seeking mode of vision, past events form the basis of calculation for future action. Even if only anecdotal, this image helps to explain the situatedness of the perceptual architecture. The camouflage flight suits worn in the control room can similarly be read as marking the space as military, functioning as an (unconscious) reminder of a duty to protect from "unknown unknowns." The enclosed space of the drone control room does not simply house the perceptual, immaterial architecture of drone operations; it also becomes part of it.

The drone control room's exterior of comparatively thin, exposed steel boxes at first glance presents a sharp contrast to the Cold War SAGE defense system, whose blockhouse control centers were actual bunkers protected by "thick and opaque concrete walls." 43/fig.5 Shifting the focus to the underlying mechanisms, however, allows for the perception of certain continuances, for seeing the container form as a materialization of the perceptual architecture established during the Cold War. What was learned in designing the buildings for the "military-industrial-academic complex" was the "instrumental value of being able to respond flexibly to new scientific developments," Martin argues. With research agendas continually shifting, the spaces themselves had to be as flexible as possible "in anticipation, as it were, of that which cannot be anticipated." 44 While the "tin box" of the drone control room is visually starkly different from the SAGE control centers as well as the office buildings Martin discusses, the underlying mechanism of a modular, ordered space is in fact similar. Containers are comparatively cheap, flexible, mobile, and readily available. The container architecture enables the U.S. military to continually modify and expand, adapting

to perpetually changing understandings of threat and solutions to fight them. The drone control room hence not only houses military operators but actively contributes to the perpetuation of boundless, endless warfare: “unknown unknowns” are literally built into the system.

State of Emergency: The Spaces of the French Colonial Continuum

Léopold Lambert

On October 30, 2017, the French Parliament approved the law "reinforcing internal security and the fight against terrorism" by 415 votes to 127. This law was drafted by the Macron administration to crystalize into common law most of the exceptional measures the state of emergency enables. After almost two years of application in France and the so-called "overseas

territories," the state of emergency thus ceased, but it was replaced by a normalized legal regime, thereby confirming the cliché that the exception always becomes the rule. The law immutably implies the territory of its jurisdiction, as well as the physical means through which



it materializes and enforces itself. There is therefore an architecture of the state of emergency, and through this ratification of permanent emergency most architectures that make up the cities of France are affected and in turn affect how they are experienced by the bodies they organize in space. To understand the nature of the political order they implement, it is crucial to examine the genealogy of the French state of emergency.

Originally drafted to be applied immediately to a situation that was perceived to require hypertrophied executive and police powers, the first state of emergency, approved on April 3, 1955, by a vote of the French Parliament, came into effect solely in the colonial territory of Algeria for eight months, five months after the anticolonial offensive of the National Liberation Front (FLN) began. It was later replaced in March 1956 by an equivalent measure that gave "special powers" to the French government. During that time, the French army muzzled Algiers's Casbah, from where the FLN was operating, setting up checkpoints to control the movements of residents. Meanwhile, in rural areas, the colonial army emptied entire villages and forcefully relocated their residents to camps whose architecture was fully oriented toward surveillance and control, as described by Samia Henni in her book *Architecture of Counterrevolution: The French Army in Northern Algeria* (2017).

On April 23, 1961, a state of emergency was declared in both the colonial Algerian territory and in France. Although the exceptional measures were triggered by the attempted French military coup, the bodies they targeted were mostly Algerian. Prefect of Police for Paris Maurice Papon, whose experience in colonial counterinsurgency was deemed adequate to run the police of the French capital, used the state of emergency to intensify his operation targeting all Algerians suspected of acting in solidarity with the FLN. On October 5, 1961, he declared a curfew for

Algerians in Paris and its banlieues. Twelve days later, the FLN organized massive evening demonstrations against this racist measure. The massacre that ensued is usually remembered as locally and temporally situated. According to this officialized narrative, a few dozen Algerians were thrown by the police into the Seine from the Pont Saint-Michel in the heat of the moment. In reality, the massacre was systematic and occurred in multiple spaces and temporalities as shown by the precise research of Jean-Luc Einaudi in *La bataille de Paris* (1991). Algerians living and working in Paris's banlieues would have had great difficulty reaching the center of the city in order to join the demonstrations. Bridges and subway stations were particular sites of violence — places where Algerians were arrested, beaten with batons, or even shot and thrown in the Seine — as their narrowness aided police efforts to exert tight, systematic control. Later that night and in the following days, the beatings and killings continued in various Parisian buildings that had been turned into improvised detention centers. An estimated two hundred to three hundred Algerians were killed in a massacre for which no one in the police force has been held responsible.

Colonialism controls its own critique in order to ensure its perpetuation while manufacturing the myth of its past historicity. The independence of Algeria on July 5, 1962, is interpreted in the French national history as marking the end of "the colonization." What this narrative deliberately omits is the

colonial reality experienced in territories that were never decolonized and still remain under the vague appellation of “overseas departments” (Martinique, Guadeloupe, Guiana, Réunion, and Mayotte) and “overseas collectivities” (Kanaky-New Caledonia, Wallis and Futuna, Tahiti Nui, Saint Barthélemy, Saint-Martin, and Saint Pierre and Miquelon) — statuses that all nonprotectorate colonies shared from 1946 until the date they became independent. Insurrections and general strikes in these overseas territories have occurred regularly since their annexation.



Some were bloodily suppressed by the French police (e.g., in Guadeloupe, 1967, or Martinique, 1974), and in 1985 French *gendarmes* in Kanaky-New Caledonia killed Éloi Machoro, one of the leaders of the indigenous Kanak revolt, a few hours before a state of emergency was declared in the Pacific archipelago.

The state of emergency was next applied in a geography relating to the “French colonial continuum”: the banlieues of twenty cities in France (including the five largest: Paris, Marseille, Lyon, Lille, and Toulouse), where many former colonial subjects and their families had been assigned to live in the modern, large-scale social-housing complexes segregated



VILLENEUVE
LA GARE

COLOMBES

GENNEVILLIERS

BOIS
COLOMBES

GARENNE
COLOMBES

ASNIERES
SUR SEINE

Force de
Police
Auxiliaire

Bidonville des
paquerettes

Bidonville
de la Folie

COURBEVOIE

NANTERRE

Pont de Clichy
Pont d'Asnières

LEVALLOIS
PERRET

NEUILLY
SUR SEINE

PUTEAUX

SURESNES

Hôpital Beaujon

Etoile

SAINT
CLOUD

BOULOGNE
BILLANCOURT

Stade de
Coubertin

Vel d'Hiv

Rue de Lille

SEVRES

ISSY LES
MOULINEAUX

VANVES

MALAKOFF

RATP
Bus Depot



SAINT DENIS

LE BOURGET

LA COURNEUVE

DRANCY

AUBERVILLIERS

BOBIGNY

SAINT OUE

15

Locaux de la BAV

Métro station Porte de la Villette

PANTIN

Métro station Porte de Clignancourt

Métro station Porte de la Chapelle

Commissariat des Grandes Carrières

XVIII

Caves Police

XIX

PRE SAINT GERVAIS

LES LILAS

ROMAINVILLE

Métro station Mairie des Lilas

BAGNOLET

MONTREUIL

Métro station Mairie de Montreuil

VINCENNES

SAINT MANDE

18

Centre d'Identification de Vincennes (CIV)

CHARENTON LE PONT

SAINT MAURICE

Métro station Charenton-Ecoles

Métro station Porte d'Orléans

Hopital Ste. Anne

XIII

Caves Police

6

21

XIV

Quartier St. Séverin

Préfecture de Police

Place St. Michel

23

Bassin de l'Arsenal

Gymnase Japy

XI

Grands Boulevards

Opéra

14

IX

X

13

12

III

IV

V

VI

1

2

3

4

5

from the city centers. In October and November 2005, some of the banlieue youth revolted against the profound social inequalities to which they were subjected. They burned many cars, as well as a few buildings, and responded to the police violence deployed against them. The state of emergency declared in reaction to this uprising made explicit the target of the legal measure of exception; it thus inadvertently interrogated the nature of what has been called postcolonialism, revealing the colonial logics at work on territories where nonwhite populations live. Ten years later, the two-year-long state of emergency declared after the murderous attacks on Saint-Denis and Paris reconfirmed such a targeting. Yes, its capacity to muzzle demonstrations and opposition was on full display during the 2015 COP22 Summit and during the numerous demonstrations against the new labor legislation in the spring of 2016. And, for people whose social and economic status enables them to live in French city centers, the state of emergency was manifested by the threatening presence of fully armed patrolling soldiers and police officers. Away from city centers, however, in the banlieues, the police suppressed demonstrations with less restraint. And the most intense violence did not occur in public space but in the five thousand Muslim-owned apartments, houses, offices, restaurants, and religious buildings that were searched by police, sometimes in the middle of the night and often with a high degree of physical or verbal

violence, but seldom with the state taking further legal action: 99.6 percent of these searches were not followed by any prosecution (Hassina Mechai & Sihem Zine, *L'état d'urgence (permanent)*, 2018).

Studying the French state of emergency is therefore useful because it mobilizes the multiplicity of geographies and temporalities of the colonial continuum. Through its regime of exception, it renders particularly visible the French state's efforts to sustain the political, social, economic, geographic, and cultural essentialist inequalities between white and nonwhite bodies through which colonialism enforces itself. Architecture is not simply the neutral frame in which this violence takes place. Rather it has a full part in the struggle between the colonial order, which it enforces with great efficiency, and the anticolonial resistance, to which it can occasionally contribute.

figs. 1 a–c "Chrono-cartography of the October 17, 1961 Massacre of Algerians in Paris," *The Funambulist*, May 22, 2017, <https://thefunambulist.net/history/chrono-cartography-october-17-1961-massacre-algerians-paris> (accessed August 16, 2017). Illustration by Léopold Lambert, 2017.

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fig.4 Private photograph, courtesy of Robert Berger.

fig.5 Werner Heierli and Leonhard Jundt, "Personenschutzräume," *Schweizer Baublatt*, special issue (April 1972): 39–53, here 43.

fig.6 Saudi-Swiss Symposium on Civil Defense Safety and Security, Riyadh, Kingdom of Saudi-Arabia, October 19–22, 1986, Symposium Proceedings, annex.

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Designing within and for War Zones

fig.1 Vitruvius Pollio, *Les Dix livres d'architecture de Vitruve*, ed. Claude Perrault (Paris: Jean Baptiste Coignard, 1673), plate LXV, fig.1.

fig.2 Courtesy of Pavillon de l'Arsenal, Paris.

fig.3 Lieutenant-Colonel Vauthier, *Le Danger aérien et l'avenir du pays* (Paris: Berger-Levrault, 1930), 19.

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fig.1/fig.7 United Nations Relief and Works Agency for Palestine Refugees in the Near East.

fig.2/fig.3/fig.4 Ismae'l Sheikh Hassan, "On Urbanism and Activism in Palestinian Refugee Camps" (PhD diss., KULeuven, 2015), 18, 152, 149, 145.

fig.5/fig.6 Lebanese Army Geography Department, Baabda, Lebanon; United Nations Relief and Works Agency for Palestine Refugees in the Near East.

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fig.2 *Warchitecture: Sarajevo Urbicide* (Sarajevo: DAS-SABIH, 1994).

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fig.2 From the U.S. National Archives and Record Administration, as printed in Barry Katz, "The Arts of War: 'Visual Presentation' and National Intelligence," *Design Issues* 12, no. 2 (1996): 3–21, here 20, fig.6.

fig.3 John Harwood, "The White Room: Eliot Noyes and the Logic of the Information Age Interior," *Grey Room* 12 (2003): 5–31, here 23.

fig.4 Michael T. Flynn, Rich Juergens, and Thomas L. Cantrell, "Employing ISR: SOF Best Practices," *IFQ* 50 (2008): 56–61, here 57.

fig.5 Still from *Rise of the Drones—Documentary*, PBS, January 23, 2013, <https://www.youtube.com/watch?v=GiTTX0WFB0g> (accessed June 28, 2018).

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fig.2 "Capresisches, Anacapresisches," *Monatshefte für Baukunst und Städtebau* 18, no. 1 (1934): 22–24, here 22, figs.2 and 3.

fig.4 Bernard Rudofsky, "The Quiltmakers," *trans/formation: arts, communication, environment* 1, no. 2 (1951): 62–64, here 63.

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fig.3 Photograph by Willi Friedemann, former employee of the transmission station in Herzberg. Gerd Klawitter, ed., *100 Jahre Funktechnik in Deutschland: Funksendestellen rund um Berlin* (Dessau: Funk Verlag Hein, 2004), 127.

fig.4 Personal archive of the author.

fig.5 Bundesbeauftragter für die Stasi-Unterlagen, Ministeriums für Staatssicherheit, Bezirksverwaltung Berlin, Abt. III, Nr. 691, Bl. 77.

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